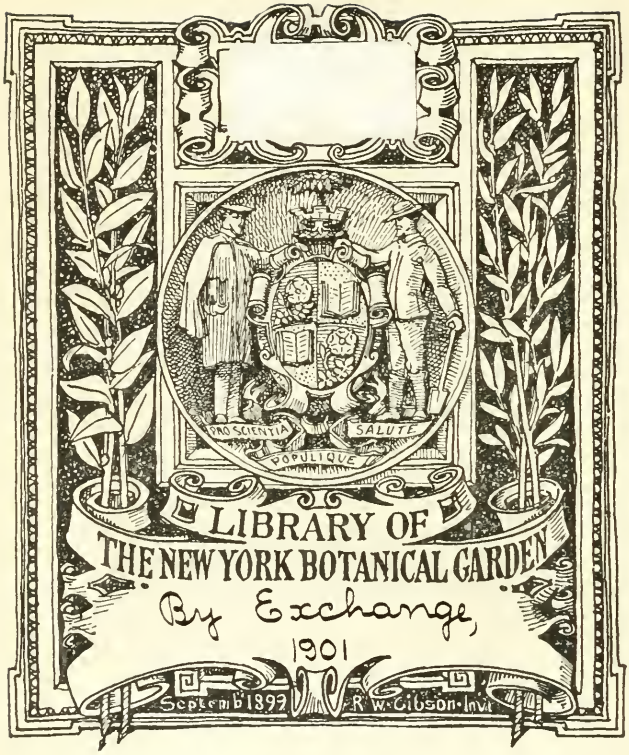
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OF THE

CALIFORNIA

State Agricultural Society

DURING THE

YEARS 1868 AND 1869.

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REPORT

OF THE

State Board of Agriculture

FOR

1868 AND 1869.

D. W. GELWICKS, STATE PRINTER

NEW YORK
BOTANICAL
GARDEN

REPORT.

To His Excellency,
H. H. HAIGHT,
Governor of California:

SIR: In obedience to law, we submit for your consideration the following report and suggestions:

We are happy to record the fact that during the last two years all the agricultural industries of our commonwealth have been highly prosperous. Providence has smiled on the efforts of the husbandman, and the generous earth has bountifully repaid him for his labor.

Being nourished and fed by agriculture, as the great fountain head of all other industries, manufactures and commerce, in all their modifications, have enjoyed a season of prosperity unprecedented in the history of our State.

For these blessings upon our commonwealth—entering, as they have done, into every household, and increasing the enjoyment and happiness of every family and individual in the land—unreserved gratitude is due to Him at whose hand we have received them.

THE SOCIETY.

In connection with the other evidences of prosperity which everywhere surround us, it gives us great pleasure to state the fact that since the organization of the State Agricultural Society, by Act of the Legislature in eighteen hundred and fifty-four, it has never been in a better condition, financially and otherwise, than at the present time.

Pursuant to the objects for which the society was organized, the Board have held two annual fairs since their last biennial report. These fairs, considering the comparatively small population of the Pacific coast, from which they necessarily had to draw their chief patronage and support, were well attended by all classes of the community, and we have reason to believe, have proved a general benefit to all the various industries of the State.

The following abstract from the Treasurer's books shows the receipts from all sources and the disbursements for all purposes, during the past two years:

RECEIPTS.		
Receipts for 1868	$27,107 15	
Receipts for 1869	28,497 85	
Total receipts for two years		$55,605 00
DISBURSEMENTS.		
Disbursements for 1868	$27,107 15	
Disbursements for 1869	28,326 07	
Total disbursements for two years		$55,433 22
Balance on hand		$171 78

During the first nine years of the society's existence, though of great benefit to the State, in directing the development of her resources, like most other public beneficiary institutions of those early days, it proved a financial failure, and a large debt accumulated against it, amounting, in eighteen hundred and sixty-three, to over twenty-six thousand dollars. For the past six years, however, under a different system of management, it has been more successful in this respect, and to-day it does not owe a dollar, and has, as will be seen by the above exhibit, a small sum on hand with which to begin the work of another year.

While encumbered with indebtedness, and the creditors anxious for their pay, the Board will frankly acknowledge that they have deemed it prudent, and, indeed, have considered it a duty, to manage the affairs of the society with an eye to the speedy payment of the debt, believing that in this manner they could the sooner open for it a field of more extended and permanent usefulness.

The pecuniary embarassment under which the Board have labored, and the desire to free themselves of this embarassment, has rendered it necessary for them to plan and conduct the annual fair in the past in such a manner as to secure the greatest possible income with the least expense. The necessity for this course, we believe, has not been generally understood, and hence there may have been heretofore an *apparent* reason for complaint that some of the industries of the State were made more prominent at the fairs of the society than others. The debt having been paid, and leaving the society in possession of means too small without assistance to be of much service to the industrial classes, it is suggested that an appropriation of at least five thousand dollars a year for the next two years is necessary to enable the Board to carry out those improvements in management they desire to make. This sum is small compared to what could most profitably be used by Board in offering premiums for strictly agricultural products. The present unhealthy condition of our agriculture, as we shall hereafter show, calls for the introduction and cultivation of a greater variety of products. These changes and improvements can only be brought about by offering inducements to individual enterprise and experiment. Money appropriated to societies like the one we represent is only loaned to the people, and if judiciously distributed, will soon be returned to the treasury with interest. The Board are necessarily to some extent the servants of those who the most liberally sustain them and furnish them means;

but they are now, as they ever have been, ready and anxious to put the society in a position the most effectually to serve the best interests of agriculture in all its branches, and to lend a helping hand to all other industries in the State.

And now that the society is in condition, with the assistance above asked, to be rendered comparatively free from the necessity of catering to the public taste, whether good or bad, for the purpose of accomplishing a pecuniary end, it is hoped that that assistance will be cheerfully granted.

The Board would also extend to the representatives of every industry in the State a hearty invitation to come forward and give them an earnest and efficient support, and on their part they will promise equal consideration to all. Let every one bring forward for exhibition at our annual fairs samples of the products of whatever industry he may be engaged in, and he may rest assured that he will receive, at the hands of the officers of the society, a hearty welcome, and his exhibition that degree of attention and consideration its merits may deserve. It has been too much the custom of our people to come to our fairs empty-handed, preferring the leisure and freedom of a visitor to the care and trouble of an exhibitor. To this thoughtless and unwarrantable custom among the industrial classes must be attributed, more than to any bad management on the part of officers, the lack of that general interest so necessary to render these exhibitions of that value to the State which a different course might and ought to make them.

To this custom, more than to any other cause, must also be attributed the reason why the agricultural fairs throughout the country, as well as in this State, have for years back been leaning too much to exhibitions of stock, and trials of speed on the race course, rather than to the more useful and more really interesting general exhibition of the productions of all the industries. With the people, more than with the managers of these institutions, rest the responsibilities of the past, and with them also will rest the changes for the better in the future. If such changes are desirable, the present period in the history of our State is most auspicious for their inauguration.

There probably has never been a time since the organization of our State Society, when so many circumstances combined to render its opportunities for benefiting the commonwealth so numerous and conspicuous as at present. The watchword of California to-day is the rapid and healthy development of those vast and varied resources which her own citizens have long known she possessed, but the existence of which the outside world are but just beginning to realize. The fact that California was introduced to the world through the discovery of her gold mines, and the striking contrast between her climate and seasons and those of the countries from which her first settlers came, for a long time blinded even her own people as to the value of her agricultural and other industrial resources, aside from mining. To correct these first impressions and convince our own citizens of the value and importance of those resources, has furnished a constant field for the labors of the society in the past. As much, and perhaps more has been accomplished by correspondence, by the collection, publication and distribution of facts and statistics, by urging the introduction and prosecution of new and varied industries, by calling attention to the superior profits to be realized by the production of one article or set of articles over another, than by the holding of annual fairs.

The publication and distribution of the volumes containing the trans-

actions of the society, embracing, as they have done, a vast amount of information upon nearly every industry prosecuted within the State, has been attended with very beneficial effects, both at home and abroad, where they have found their way by exchange and otherwise. These reports are sought and read with interest by almost all classes of the community, and are almost daily being called for by the intelligent people of other States and countries, who are anxious to learn of the advantages and resources of our State. Some of the later issues are completely exhausted, and it may become advisable to reprint additional volumes. But the isolated position our State has heretofore occupied has been a serious obstacle to the full realization of the fruits of the labors of the society, except among our own people. Now, however, by the completion of the continental railroad, and the consequent competition between it and the steamship lines from the Atlantic States and our own, we are brought nearer to the great centres of the population of the world, and a much wider field is opened up for the labors of the society, in inducing and assisting to supply to our State a desirable and valuable

IMMIGRATION.

We have repeatedly called the attention of the Legislature to the importance of adopting some measures by which to induce a larger immigration from the Atlantic States and Europe. In our last report we referred to the subject, and will repeat here a portion of what we then said:

For the last ten years it has been evident to all who have given the subject a careful thought, that nothing would contribute so much to the advancement of our prosperity as a commonwealth, as the influx of a large immigration of industrious citizens. Every class of the community experiences the want of labor. Every department of industry needs the stimulus only to be found in a plenty of labor adapted to its wants.

Our resources are so much greater than our ability to develop, that the demand for immigration may be said to be universal.

There is no principle in political economy more thoroughly established or more generally acknowledged than that a State cannot come up to its natural standard of prosperity without sufficient labor to develop and husband its resources.

When we see a farmer, a miner or manufacturer, attempting to do three or four times as much work as he can command means and labor to accomplish, and accomplish well, we do not expect to see him succeed, and he never does succeed, but generally makes a disastrous failure. The present condition of our State, possessed as we are of a great variety and abundant resources, without a corresponding amount of labor and means, is just calculated to induce our enterprising and energetic citizens to this very course.

Our most enterprising men frequently fail in their undertakings, simply from the fact that they cannot command sufficient labor, at reasonable rates, to carry through to a successful conclusion their enterprises.

We need not cite proofs of the necessity of immigration to our State. The proposition is universally acknowledged. The only questions now open for discussion are: How shall we secure the most valuable immigration in the shortest space of time and in the most economical manner? Many plans are proposed, many schemes are advocated—some purely

and disinterestedly for the public good; others with evident designs for private and individual speculation more than for the benefit of the State. All parties, whatever may be their favorite plan, and whatever motives may prompt them to the advocacy of this plan, know full well that legislative sanction and aid for the furtherance of their object is much to be desired. As a general rule, the Legislature will find those plans which are designed most for the benefit of individuals and least for the benefit of the State will be advocated with the greatest apparent disinterestedness, but at the same time will be clung to with the greatest tenacity and urged with the greatest importunity by individuals who, either for themselves or for their friends, expect special and peculiar benefits. While, therefore, we would thus counsel caution, we would at the same time most earnestly urge action on the part of the Legislature in this matter.

There is undoubtedly a great lack of information as to the real position, advantages and resources of California, even among the people of the Atlantic States, and particularly so among those of European countries from which our immigration would be most desirable.

Then, the first point to be accomplished should be to reach those countries and those people with correct information in regard to every department of industry in California. We want to show them, in an authoritative and reliable manner, through some channel upon which they could and would depend and rely for correct information, the extent of our agricultural, mineral and manufacturing resources; the extent to which they are already developed; the facilities for continuing to develop them, and the liberal remuneration, both to capital and labor, which can be secured by those who will come and assist in their development.

We want to show them more in detail the quality of our soils, the nature and advantages of our climate, the kinds and quantities of the necessaries and luxuries of life that can be produced here, and when and at what prices those necessaries and luxuries can be sold, and what are the means and expenses of their transportation to such market.

We want, in fact, to show them, as we can, that California is the best place in the world for the industrious rich man to increase his riches, and the industrious poor man to become rich—the best place in the world for all classes of industrious people to live easy and happy. Now, how shall this information be conveyed to these people?

THE STATE FAIR OF EIGHTEEN HUNDRED AND SEVENTY.

While we would not in the least place any impediment in the way of any judicious and well intended effort by individuals or associations to induce and assist an immigration of desirable people to this State, we would call the attention of the Legislature to one of the best opportunities for accomplishing more in this direction, with the least expenditure of money, and without any danger of imposition either on the State or on the immigrants, than ever has been, or probably ever will again be presented. The completion of the railroad across the continent the past summer, has induced many of the business men of the Atlantic States, including representatives of nearly every branch of industry, to visit our coast for the purpose of personal observation, and to acquire reliable information as to our advantages and resources. As a general thing, they returned well pleased with what they saw here, and have become so many additional witnesses as to the superior advantages here offered to labor and capital. Many of our own people have visited their old

homes and friends at the East, and have no doubt assisted to increase the desire there among all classes, at least to visit us, if not to become permanent residents among us. What is wanted now is some move on our part to keep up and increase this desire, and to assist in its realization. We propose, as a medium for the accomplishment of this object, the State Agricultural Society; and the particular occasion, its fair of eighteen hundred and seventy. We all know that it is useless for us to tell the people of the Eastern States, or any other country, of the wonderful products of our soil. They treat our plain and truthful statements as extravagant exaggerations. Nothing will bring them to a full realization of the facts but actual observation. Such we propose to give them the opportunity of making.

If the Legislature will treble or quadruple its annual appropriation to this society for the year eighteen hundred and seventy, we believe that a greater immigration of the most desirable classes of people can be secured within the year, than can by the expenditure of double the amount of money in any other way. With such assistance, and on such an occasion, the Board could make such an exhibition of the products of California as has never been made by any State in the world.

They would first take steps to interest and stimulate all classes of our own people to make the proper effort, and to carefully and judiciously direct those efforts to a successful result. They would next secure the most ample and favorable arrangements with railroads and steamship companies, for the conveyance of people and goods from all parts of the country to California. They would then send reliable and competent agents to all advisable points in the East, to publish the necessary information to induce people to come and see what California can do, and how much better they can do here than any where else in the world; this information to be of such a character as would tend to bring families to make this their permanent residence thereafter, as much as possible. In the interest of such, proper favorable discriminations in many respects might be made. Particularly, special cheap fare for families and transportation of goods could be arranged, no doubt, with the Pacific Railroad Company. In carrying out this plan, many details would be suggested, not necessary to mention in this report. We would recommend this subject for the favorable consideration of the Legislature, and would also suggest that early action on the subject would greatly conduce to a realization of its greatest advantages.

PERMANENT IMMIGRATION ASSOCIATION.

The above plan to induce and assist immigration would, of course, be but temporary. It would, however, be very useful in opening up the subject and introducing it to the world, and preparing the way for the effectual operation of a permanent organization. The advantages of such an organization to the State, if properly conducted, cannot be doubted by any person who knows and appreciates the condition of California.

In the formation of such an organization, great care should be taken to avoid weak points, and to secure for it the confidence of all the people of the State. Especially should such an organization have the perfect confidence of those who are most interested in its success, for to them it will have to look for a larger share of its support. It should also have the sanction and assistance of the State, to give it confidence and character abroad. It should be neither local, political or sectional in any

sense. All portions of the State should have an equal voice in its management, in order to secure an equal chance in its benefits. All the industries should have a share of its consideration, in proportion to their present and prospective importance. Hence agriculture, being the great industry of the State, and being the one likely to attract by far the greatest number of immigrants, should have a proportional share of representatives on the Board of Managers. It would not be improper that the principal officers of the prominent agricultural associations should have a place and voice in such organization. This idea would tend to divest it of any seeming personal or private character, and to give it the confidence of all classes. The agents and appointees of such an organization, who are likely to come in contact with the people, especially with immigrants, should be selected for their integrity and competency. They should know California, and be able to present her advantages of every character, to the world, in a clear and forcible manner.

KIND OF IMMIGRANTS.

The class of immigration we most need in California is such as will come to make permanent homes for themselves and families. We want, above all others, persons skilled in a great variety of agricultural pursuits. We want persons skilled in the culture and manufacture of silk, in all its departments. We want vine growers and wine makers. We want beet raisers and sugar manufacturers. We want tea culturists and fruit preservers. In short, we want people skilled in the production of all the necessaries and luxuries of life, for we have a State possessed of all the requisite conditions for their successful cultivation. We want such as will bring with them sufficient means, energy and capacity to enter upon business for themselves. Such as will buy land and become citizens and practical and prosperous farmers, or build shops and factories, and follow some mechanical or manufacturing occupation. In order to induce this class of persons to leave their homes and business in the Atlantic States and come here to reside, we must promise them opportunities for making better homes and better business here. Are we prepared in good faith to make such promises? And, having made them, are we prepared in like good faith to fulfil them? So far as natural advantages, such as climate, soil and location are concerned, we are prepared to answer both these questions in the affirmative. We may also say there are millions of acres of arable land, much of it as good as any now cultivated in the State, lying idle and unoccupied, and that by the completion of railroads already projected, and many of them now being built, much of this land will in a short time be brought within easy distances of good markets for products that may be raised upon it. There are, however, some clouds which throw a shade over the picture we might present to the immigrant. One of these, and perhaps the most difficult one to remove, is found in the fact that a large portion of this unoccupied and idle land has already passed from the hands of Government into the hands of capitalists and corporations, who purchased it in anticipation of selling at a large advance to immigrants, whom it was expected the completion of the Pacific Railroad would bring into our State. This fact becoming known abroad, has operated and is still operating to prevent such immigration, so that while the landholders have failed in their anticipated sales and

profits, the State has been seriously injured and is still being injured. It is undoubtedly within the province of the Legislature to do much towards correcting this evil by enforcing an equalization of taxation, and by asking such action on the part of the General Government as will put a stop to this concentration of so much of our public lands in the hands of speculators.

Another drawback to an immigration of the producing classes is found in the ruling high rates of interest on money in our State. By the increased facilities of trade, our farmers and mechanics are brought into direct competition with the farmers and mechanics of the Atlantic States, and as many of them are compelled to do business on borrowed capital, the high rate of interest demanded by capitalists here operates as a direct discrimination in favor of the Eastern producer. This evil is brought home to the immigrant with greater force when he attempts to purchase land here. If he finds himself unable to pay down the whole of the purchase money for the quantity of land required, the high rate of interest demanded for the balance of the purchase money discourages the investment, and thus is worked another serious injury to the prosperity of our State. Capital, when properly invested and used to assist labor, is a good and necessary thing in any country, and especially in a new State, with boundless undeveloped resources like ours, but when allowed greedily and blindly to oppress labor and cramp the development of those resources, it becomes an evil of the most dangerous character, and like any other evil, should receive the attention of the Government.

The high rates of fare and freight demanded by some of our railroad companies, where competition does not tend to correct the evil, may be cited as another drawback on the development of the country. They also have their influence to retard immigration. Intelligent people inquire how much it costs to move the products of a country to market, as well as how much and what that country can produce, and what those products will sell for in the market. All new States have had these same evils, in a greater or less degree, to contend with. A few straight forward and judicious laws enacted touching these subjects, would doubtless be attended with good results, both as to the development of the country and in inducing immigration. In forming such laws, however, care should be taken not to drive capital from the State or to discourage its coming here for investment. The object of such legislation should be rather to induce it to come in greater quantities, and to show it opportunities for investment, where the profits being more certain and secure, will not necessarily be required to be at so high a rate per cent. If capitalists can see greater inducements for the investment of capital in agricultural and manufacturing enterprises, than in land for speculative purposes, or in holding it for high rates of interest, they will not hesitate as to what course to take. If they can see a growing business for additional railroad enterprises, they will not hesitate to build competing roads, thus reducing the fares and freights on all by increasing the business, and without lessening the certain profits of all.

We would here mention a practice among our capitalists, which has already done a great injury to the State, and which, if continued, cannot but work a direct injury to capital itself. We refer to the discrimination made by our money loaning institutions, in favor of city and against country borrowers. The cities cannot prosper without the country is developed. If any class of men should be favored by capital, that class should be the pioneers of the country, for they, more than any other

class, give value to the country and the cities, and create the opportunities for the profitable investment of capital everywhere. Laws to facilitate and reduce the expense of securing money loaned in the country would prove beneficial.

DIVERSIFIED AGRICULTURE.

Probably no equal portion of the earth's surface is so well calculated, from its great variety of soils and climate, to sustain a diversified, and hence, profitable agriculture, as California. All the products of the temperate and many of those of the tropical climates, flourish here with equal luxuriance. Nature seems to have marked out this country as the special paradise of the agriculturalists, and yet the great curse of our agriculture and the State is the sameness of production—the over production of a few agricultural products. It is a stigma upon the intelligence and enterprise of our farmers, that very many of the common necessaries of life, and those, too, for the production of which our State is most peculiarly adapted, and which would yield the greatest profit to the producer, are constantly imported. The very money received by our farmers for their grain, sold at a low figure in consequence of over production, is, much of it, exported from the States to pay for these same necessaries consumed by themselves. It is a shameful and deplorable fact, that many of the naturally best grain-producing portions of our State have been cropped every year for from ten to fifteen years in succession, with grain, and in many cases with one single unvaried crop—wheat. The result has proved just what the farmers have time and again been told it would bring about, a complete exhaustion of the soil. In many localities, where once the land yielded from forty to sixty bushels of wheat per acre, it now yields scarcely enough to pay for the labor of sowing and harvesting. What is still worse, many of these improvident grain farmers are disposing of their exhausted lands and moving to other sections to find a virgin soil, which they, in turn, will in like manner exhaust. This practice of constant cropping with a single product, and thus exhausting much of the best soil in the State, cannot be too severely discountenanced. It is more suicidal and vicious, if possible, in its effects upon the prosperity and good name of the State, than that half civilized vandalism which would recklessly and uselessly destroy the growing timber on our public lands, and thus lay waste the greatest redeeming feature of our climate. The exhaustion of the soil is not the only evil resulting from this pernicious and unnatural practice of farming—we cannot dignify it by the name of *husbandry*.

Like all great violations of the laws of nature, it recoils, in its effects, upon those guilty of the violation, but not upon those alone, for its evil effects are felt by our whole population. In planting, harvesting and marketing a single crop of grain, not over one-half of the year is necessarily consumed by our farmers. Thus, throughout our great agricultural districts, there is a season of active labor for all and a season of idleness for all. As a result of this mismanagement of the agricultural industry of the State, there is lost to these districts, and to the State at large, each year, the profits of nearly half the agricultural labor of the State. As another result, all that large class of persons who depend for a livelihood on daily labor upon our farms are, during all this idle season, thrown out of employment, and are consequently deprived of the means of subsistence, and to compensate them for this idle season, they are compelled to demand of their employers proportionately high wages

while they do labor. The employers, from the exigency of their position in the busy season, are, in turn, compelled to comply with this demand. Thus it turns out, that for the year's operations the farmers themselves realize but about half what they should realize, and the labor they employ, though receiving double price for the time actually engaged, is but poorly paid. Hence, too, we find all these same laborers, during the balance of the year, running up and down through the State, with no money in their pockets, looking for employment. Such is their condition at this present time, as every farmer and every hotel-keeper in the country can testify.

Again, frankness compels us to take another and still worse view of this ugly subject. Idleness is the mother of crime; hence we see so many persons of dissipated habits in our land; hence we hear of so many robberies on our public highways and in the streets of our cities; hence so many burglaries and petty thefts during the fall and winter months—the idle season in the agricultural districts. This picture is not overdrawn. As unpleasant as it is to be compelled to publish it, as damaging to the fair fame of our State as are its ugly features, still it does not even present the wretchedness of the reality.

It becomes us, then, as the representatives of the industrial classes, as the friends of the laborers and employers of our State, to inquire into and suggest the remedies for the evils as they exist. These remedies do not lie in any eight-hour laws, or any other laws restricting the hours for a day's labor. Nor are the remedies to be found in laws excluding labor of any kind from the State, or in placing burdens of any kind upon that labor. Neither will it remedy the evil by attempting to legislate for the protection of white or black, or any other colored labor.

In this report we wish to be understood that we represent no political party, being of all parties, and that we favor no political ideas whatever, except those suggested by true political economy and the best interests of the State. Weighed in this balance, the laws above referred to, and all legislation of that character, will only make the matter worse, as they can have no other effect than to create ill will and ill feeling between the different classes of laborers, and suspicion and distrust between laborers and employers. Such laws do not recognize, and consequently do not aim, at the real cause of the trouble.

This cause, as we have shown, affects the employer as much as the employed, and the remedy must be one that will reach and mutually benefit both. We have a plenty of work in our State for all the labor there is here, and a hundred times as much more. We have resources here sufficient for the profitable occupation of all the master farmers and mechanics there are here, with all the capital they can employ, and would have, if there were a hundred times as many, commanding a thousand times as much capital.

To admit any other propositien would be, indirectly, to assert that we want no more population—that we want no more immigration; in short, that our resources are already being developed as fast as they can be rendered remunerative. These positions are too absurd to require a moment's consideration; and yet all laws of the character above referred to are founded upon these positions as their basis, and, if spread upon our statute books, will have a tendency to place us before the world in this extremely absurd and false position. What we want, above all things, to give us universal prosperity and constant and remunerative employment for all classes, is a diversified agriculture; an agriculture so varied in its products and so constant in its operations that it will require about an

equal amount of labor every month in the year; an agriculture that will produce not only all that a dense population would require for home consumption, but one that would furnish for export products a thousand times more valuable than would be all the wheat our State could produce, if every acre of land within its borders, adapted to its cultivation, were to yield a hundred bushels a year. That nature designed California for an agriculture as diversified in its character as are the soils and climates of her thousands of valleys and innumerable mountain and hill sides, and as valuable as the world has ever known, cannot be doubted.

What we need now, more than anything else, to secure to our State to the fullest extent the benefits of such an agriculture, is that degree of governmental encouragement as will induce judicious and careful investigation and experiment with new and valuable products. In a Government like ours, where every citizen is a sovereign and has an equal interest in the prosperity of the country, every new industry introduced tending to increase that prosperity inures to the benefit of all. Hence, it is but right and just that the expense of proper experiments to test the practicability of the successful introduction and profitable prosecution of new industries should be borne, to a certain extent, by all. This just and equitable principle has been recognized by every enlightened and prosperous Government known in the history of the world, and in proportion as this principle has been acted on by the different Governments, just in that proportion have those Governments increased in power and prosperity. To the intelligent encouragement given by the first Napoleon to certain agricultural industries, silk and beet sugar, France is indebted to-day for the advanced position she occupies among the powerful nations of the earth. England, by the protection and encouragement of her manufactures and commerce, has grown to be the first manufacturing and commercial country in the world. Our own General Government acted upon this principle in the establishment of an Agricultural Department, under the direction of which the introduction and cultivation of new products are being experimented upon at the public expense. The donation by the National Government of public lands to the several States, for the establishment and maintainance of agricultural colleges, is another act recognizing the same principle. It is for the introduction and encouragement of new and valuable products at the public expense that every enlightened and prosperous nation in the world has established agricultural and other industrial societies, and appropriated to them money for the payment of bounties and premiums. It is upon this same principle that copyrights are secured to authors and patents to inventors by the different nations of the earth. Subsidies to steamship lines and great national railroad enterprises are prompted by the same enlightened policy as premiums and bounties to individuals for the introduction and cultivation of new and valuable agricultural products. Indeed, the justice, the policy and the manifold advantages of governmental encouragement to individual enterprise for the development of the resources of a country are so well established by reason, and have been so favorably tested by precedent, that we deem it unnecessary to dwell longer upon the subject.

We believe that the present unfavorable condition of the agricultural and other industrial interests of California furnishes one of the strongest arguments ever presented to the Government of any State in favor of the most liberal encouragement of experiments in the introduction and cultivation of a variety of new products, and we most earnestly hope the present Legislature will give this subject their most careful consideration.

If we were to particularize, we would call attention to the following articles, some of which have been partially tried in our State, and if thoroughly tested, we believe all could be proved most valuable additions to our agricultural products:

BEET SUGAR.

California imports annually about thirty million pounds of sugar and about five hundred thousand gallons of molasses. The sugar costs our people about four million five hundred thousand dollars, in gold; the molasses, two hundred and fifty thousand dollars; in all, four million seven hundred and fifty-thousand dollars. This amount of gold is shipped from the State annually to pay for these two articles. On the sugar we pay an import duty of an average of four cents per pound, equal to one million two hundred thousand dollars; on the molasses we pay a duty of about five cents per gallon, equal to twenty-five thousand dollars; making our annual duty on sugar and molasses, one million seven hundred and fifty thousand dollars. This last sum is simply a tax on the consumers, which is paid by them in the proportion to the amount consumed, and hence it falls upon the poor much more heavily than upon the rich.

Now, we believe all this sugar and molasses can just as well be produced within our State as any where else, and thus save within the State the annual sum of four million seven hundred and fifty thousand dollars, to be distributed among our own people, and principally among the day laborers, for labor performed during the winter season—the idle season. We all believe this, and yet we do not know it. Capitalists will not take their money from investments where it pays them from twelve to eighteen per cent. per annum to invest in uncertain experiments, unless some extra inducement is offered them. Nor is it right that they should be asked to do so, for every citizen in the State is to some extent interested in the experiment, and should, therefore, pay a proportion of the expense of making such experiment. Now, suppose the Legislature were to offer a premium of two cents a pound, one-half the tax we are now paying on imported sugar, for say the first one million two hundred and fifty thousand pounds produced from beets within the State. The whole amount of this tax, if the sugar were produced, would be twenty-five thousand dollars, the amount we now pay annually as duty on molasses. This sum, we have no doubt, would be sufficient to induce people to enter into the business with energy and capital sufficient to secure success, and, within five years, to produce all the sugar and molasses we consume.

Then, what would be the financial operation resulting to the people of the State? Simply this: That, by the payment of twenty-five thousand dollars to our own people, and principally to laborers, they would have added to the working capital of the State the sum of four million seven hundred and fifty thousand dollars. And while the premium would only be paid once, four million seven hundred and fifty thousand dollars would be added to the capital of the State each year, so long as the production of sugar and molasses should equal the present consumption; and if the production should be doubled, as it probably would be in a few years—for we could always find a ready market for all we could produce—the saving to our State would be at the rate of nine million five hundred thousand dollars per annum, and so on, in an increasing ratio.

We are glad to be able to state that the Sacramento Beet Sugar Com-

pany, whose farm and experimental factory are located on the south side of the American River, some four miles from Sacramento, have proved beyond all doubt the practicability and success of this industry in our State. They have secured, in their first experiment, with new, rough and imperfect machinery, and from beets of very poor quality, a product of sugar equal to seven per cent. of the beets experimented on. This is within about one per cent. of the average product in Europe, where experiments in every department of the business have been in operation for years, with a view to increase the per cent. of product in the greatest possible ratio.

This we consider an exceedingly good and promising beginning, under the circumstances. The land on which their beets were grown is by far too wild and rich for the production of beets for this purpose. The beets grown on it are too rank and too large, containing too great a proportion of water to secure the greatest yield of sugar. Experience has proven that the best sugar land is that which will produce the best wheat or secrete a good supply of saccharine matter in grapes. No one would select an alluvial soil, already as rich as nature could make it, covered with a recent deposit of sediment, either for wheat or grapes. Nor is such soil at all adapted to the production of beets for sugar. When the proper quality of soil shall be selected, and the manufacture of sugar in our State shall be commenced under favorable circumstances, we have no doubt it will prove as successful and profitable here as in any other part of the world.

TEA CULTURE.

The tea consumed in California costs the consumers about two million dollars annually. In our last report, we called the attention of the Legislature to the generally entertained opinion, among persons who had visited the tea producing portions of China and other Asiatic countries where the plant is cultivated, that the western slope of the Sierras, running the whole length of the State, is as well adapted to the production of this article as any of the countries named. We now call attention to the fact that, since that time, a company of Japanese tea culturists have come to our State for the purpose of engaging in this industry. They have located in El Dorado County, where they have purchased a considerable tract of land and planted a small tea nursery. Though their arrival here was quite late in the season, and their commencement, consequently, was made under very unfavorable circumstances, their experience so far gives them great encouragement and promises final success. We entertain strong hopes that the effort to introduce this new and rich industry among us may not be allowed to fail for want of any necessary encouragement, and that we may, at no distant day, be able to produce enough for our own consumption and contribute no small share of the forty-five million pounds of tea annually consumed by the other States of the Union.

It could, by the same process of reasoning, be shown that judicious bounties, offered for the production of tea, would be followed by the same beneficial results to the State as in the case of sugar from beet root.

RAISINS.

We have frequently called the attention of our people to the cultivation of this fruit, and pointed out the peculiar advantages our climate offers, not only for the growing of the grape but curing of the raisin.

Experiments in many portions of the State, on a small scale, have proved the correctness of our views, and have also, in our opinion, shown that the industry could be so managed as to be very profitable. The importation of raisins into our State is about fifty thousand boxes a year, at a cost of from one hundred and seventy-five thousand dollars to two hundred thousand dollars. The importations of the United States average about one million five hundred thousand dollars in value. The process of making raisins is as simple as drying apples or any other fruit. When the grapes are thoroughly ripe they are picked and spread on tables, or on the ground, cleaned and prepared for that purpose. Two or three weeks exposure to the sun, and turning once or twice, perfects the process, and the raisins are ready for boxing and market. The black Corinth grape flourishes in our climate as well as any other variety, and the Zante currant has been made from it to some extent and of very superior quality. This is a most useful and delicious fruit, and its general introduction and cultivation would be a great acquisition to the fruit product of the State.

THE MINING COUNTIES.

The decline of the mining interest has reduced the population and wealth of these counties within the last five or six years very materially, and it seems to be a serious question how this depopulation and growing poverty is to be checked. It has been well suggested that the land embraced in these counties, both mineral and agricultural, be surveyed and sold to actual settlers. This portion of the State is in extent some three hundred miles long and twenty miles wide, and a very large proportion of it is known to be very superior for the cultivation of nearly all varieties of fruit, and particularly for the culture of the grape and production of raisins, wines and brandies. It is no doubt also peculiarly well suited to tea and silk culture. By carrying out the above suggestion, and offering proper inducements for the cultivation of these valuable products, and encouraging immigration from the countries in the middle and south of Europe and Japan, these counties could at no distant day be densely populated by a people skilled in these industries. Thus a portion of our State now going to decay would be rendered one of the most productive, healthy and inviting portions of the world—enriching the State and the nation.

RICE CULTURE.

It is one of the strangest things in the history of California agriculture that the cultivation of this grain has never been undertaken. We have thousands of acres of land, on the lower Sacramento and San Joaquin Rivers, eminently suited in every respect to the successful and profitable cultivation of rice. Probably the best explanation for the neglect of this product is found in the general and chronic indisposition of the American —and particularly the Californian—agriculturists to step out of the old grooves and routines of cultivation learned by the examples of their fathers.

We import and consume from forty million to fifty million pounds of rice annually, in our State, at a cost of about two million five hundred thousand dollars. We have a large population among us well calculated for this industry, and many of them are already skilled in its management. By directing their labor into this channel, it might be

made to contribute very materially to the wealth of the State, while, at the same time, the success of the enterprise would tend to stimulate the reclamation and utilization of the hundreds of thousands of acres of tule lands now comparatively worthless.

SILK CULTURE.

Through the successful experiments and untiring exertions of the late Louis Prevost, a Frenchman by birth, assisted by a few friends, also adopted citizens from the silk producing countries of Europe, this industry was, some four or five years since, brought prominently before the public. The conviction that our State was eminently adapted to the culture of silk, and that its extensive cultivation would prove of great benefit to the commonwealth, by increasing the labor and general prosperity of the country, as well as by inducing a most valuable immigration, became very general—almost universal.

The Legislature, at its sessions of eighteen hundred and sixty-six and eighteen hundred and sixty-eight, passed laws offering premiums for the cultivation of mulberry trees and the production of silk cocoons. These laws have had the desired effect. They have not only induced a considerable number of our native born and then resident adopted citizens to engage in the business with energy and zeal, and with most gratifying results, but they have attracted the attention of that class of foreigners which they were intended to reach, and have already introduced into our State a large number of most valuable immigrants, skilled in all the various departments of this rich industry, and have also laid the foundation for still greater valuable additions to our present population. Owing to an unfortunate difference between the popular construction of these laws, which was received and acted upon by those whom they induced to engage in the business, and the construction lately placed upon them by our Courts, we fear that very many of the benefits intended by the Legislature and reasonably anticipated from the liberal execution of them will be lost to our State.

The persons who were induced to go into the business were generally agriculturists of small means, and in anticipation of promised assistance in time of need, and relying with implicit confidence upon such assistance, they incurred expenses and contracted obligations which now, without such assistance, it will be hard for them to meet.

Thus they are not only crippled in the prosecution of the business in the future, but are to some extent disheartened and discouraged. Particularly is this the case with those of foreign birth, through whom, by their influence with their friends in the old countries, it was anticipated we should acquire a large immigration of valuable skilled labor.

We are credibly informed that the very extreme of claims that would have been made on the State, under the most liberal construction of these laws, as understood and acted upon by the claimants, would not have exceeded twenty-five thousand dollars—a sum trifling when compared to the benefits the people are likely to receive from the enterprise which has, by the inducements held out, been introduced. We are also informed that if this sum were granted to and distributed among the claimants, it would at once be added to the capital already invested in this valuable industry, thus encouraging its recipients to renewed exertion, and securing, beyond a peradventure, the early and permanent

establishment of an industry in our State more valuable than were ever our gold mines or ever will be some of the now leading agricultural productions.

Considering the great value of our silk trade and consumption, the successful cultivation of silk in California becomes a matter of the greatest moment, and the State would make money by dealing liberally with those who, in the true spirit of enterprise, have taken the lead in that cultivation. The United States import, on an average, over thirty million dollars in value, of silks, per annum. The import duty on the same is over sixteen million dollars, being a little over fifty per cent. on cost of invoiced prices. It will be seen, therefore, that the annual export of gold from California to pay for foreign silks imported can not be less than two million dollars. This sum is taken from the industry of our own people, and goes to enrich foreign capitalists and to pay foreign labor.

SILK MANUFACTURE.

The fact that California can raise the raw material successfully and profitably is no longer a question. We have already a large number of trees growing in the State and a goodly number of people engaged in the business, and we must not let it fail. It is too valuable an industry. But the mere production of the raw material is but of small consideration compared to the manufacture of this material into the various forms of fabrics for general use. It is the manufacture of silk that gives labor and capital profitable employment to a much greater extent than the cultivation. France is a very large producer of silk, but she is also a large importer of silk in its unmanufactured shape; while England is the largest manufacturing country of silk goods in the world, she does not raise a pound. All is imported, and her profits are made from this branch of the industry. We are highly favored. We can both produce and manufacture and reap the profits of the industry in all its branches. A continuance of the encouragement of the production of cocoons, and a liberal inducement for the establishment of factories, by legislative action, we believe would result in great benefit to the State.

FLAX AND HEMP.

We would call the attention of our farmers to the cultivation of flax and hemp. Both these plants are natives of our State, and experiments in their cultivation show that they may both be very successfully cultivated in the rich alluvial soils of all our river bottoms and valleys. Formerly, there being no factories here for working up the flax seed, or for converting the fibres of these plants into cloth, there was no market and no inducement for engaging in this branch of agriculture. Now, there is a market for both seed and straw. The oil factory in San Francisco is using all the flax seed produced in the State, and importing largely to keep the factory running. The cultivation of flax for the seed alone would prove much more remunerative than wheat or barley on our river bottoms. It may be sown after the water of the rivers has subsided, and mature well. An acre of ground will produce, on an average, two thousand pound of seed, which is worth four cents a pound, giving eighty dollars as the product per acre for seed alone. The yield of straw will be from two to three tons per acre. This, in the Atlantic States, is worth from twenty dollars to thirty dollars per ton. The immense demand for bags and bagging material on this coast, estimated

at not less than one million dollars in value annually, has induced some of our woollen factories and the cotton factory to turn their attention to the manufacture of burlaps and other bagging material from flax and hemp straw, and that the latter is now offering twenty dollars per ton for the straw of the farmer. At these prices, then, land may be made to yield at the rate of over one hundred dollars per acre. This branch of agriculture has been sadly neglected. From official reports we learn that the value of flax and hemp, and goods manufactured from them, imported into the United States in eighteen hundred and sixty-six, was twenty-four million one hundred and fifty-nine thousand one hundred and eighty-nine dollars. This is about the average of the annual importation, and it does not show well for a country of unsurpassed natural advantages for the culture of these products and their manufacture. As a redeeming feature, however, there was in the same year imported machinery expressly for the manufacture of these articles, of ninety-seven thousand four hundred and twenty-one dollars in value. While this machinery should also be made in the United States, as it will be, still it shows that the industry is commanding increased interest throughout the country, and we hope the farmers of California will give it their attention.

CASTOR OIL BEAN.

The soil and climate of our State is peculiarly adapted to the growth of the castor bean. The plant here, in good localities, becomes a perennial tree, bearing its annual crop like our fruit trees, and the average yield per acre, by the actual experiment of the few who have engaged in the business, is from one thousand five hundred to two thousand pounds per annum. The oil factory at San Francisco pays for the beans four cents per pound, making the crop average from sixty dollars to eighty dollars per acre. The small bean only should be planted. The tree of the large bean grows too large for gathering the crop, and is not so good a bearer.

RAMIE OR CHINESE GRASS.

This is a fibrous plant of the nettle species. There are a number of varieties, known by different botanical names, natives of China and other countries and islands in the south of Asia. Grass cloths have long been manufactured by the Chinese, from the different varieties of these plants or grasses. Ramie, or the variety botanically named *Bochmeria tenacissima*, was introduced into Calcutta from Bencoola, as early as eighteen hundred and three. In eighteen hundred and fourteen it was experimented on in England to a considerable extent, and with favorable results as to the beauty and strength of its fibre. The difficulty of separating the fibre from the gummy substances prevented its being used for practical manufacturing purposes to any extent, until eighteen hundred and forty-nine. At that time a process was discovered, of soaking the stalks in cold and tepid water, and then boiling them in a solution of alkali for twenty-four hours, and again washing in cold water and subjecting to a high pressure of steam. This discovery removed, to a great extent, the difficulty of practically using the fibre in manufacturing, and since that time it has been used to a considerable extent in some of the factories of England, in connection with cotton. With cotton it makes a fine, lustrous, silky cloth, strong and durable. In eighteen hundred and sixty-seven, the British imports of this fibre equalled sixty-five thousand two hundred and eight pounds, and it was worth nineteen

cents a pound, while cotton was worth twenty-one cents a pound, and the import of the latter was one billion two hundred and sixty-two million five hundred and thirty-six thousand nine hundred and twelve pounds. This fact is mentioned to show its relative value in the commercial and manufacturing world at that time. Ramie seed was brought from Jamaica in eighteen hundred and sixty-five, to the United States, and it has since that time been cultivated in the experimental gardens at Washington, with good success. In eighteen hundred and sixty-seven it was introduced into the vicinity of New Orleans, by M. Roezl, and a great excitement was created in regard to its cultivation. Single roots sold at a dollar each. A writer in the Agricultural Report of eighteen hundred and sixty-seven, says: "Exaggerated representations have been made, and it is feared that the ardor of experimenters may be cooled by disappointment." That it is a rapid grower cannot be doubted, as it is asserted that from a single root more than one thousand plants have been obtained in a single year. That the rich bottom lands along our river borders are well adapted to its cultivation, and that it can be produced here in immense quantities, there is no doubt. We would recommend its introduction and experimental cultivation by our farmers, in these districts, to test the question whether it can be made to pay as a staple product. The plant is grown and propagated by a division of the roots, by layers and by cuttings. The second year the stalks, in good soil, grow to the height of six or eight feet, and by harvesting the first growth when mature, it will again shoot up from the roots and produce the second crop, equal to, if not greater than the first. With facilities for its manufacture, which will doubtless be supplied if the product proves a success, we think the whole industry might be rendered satisfactorily remunerative.

GRAPE CULTURE.

It seems like repeating an old story to recapitulate the advantages of the soil and climate of California for the cultivation of the grape. The prevailing disposition of our agriculturists to produce but a single leading staple—grain, apparently without inquiry as to whether other products could be rendered more profitable, justifies a frequent reference to and discussion of this subject. There is scarcely an acre of good wheat land in the State that is not also good grape land; the exception being on the coast, in the range of prevailing fogs. On the other hand, there are thousands of acres of the most excellent grape land in the world which is valueless for wheat or other grain. This latter quality of land will be sought for and highly prized in a few years, by those who propose to make a specialty of grape, silk and tea culture. We refer to the foot-hills of the Coast and Sierra ranges of mountains. But what we want at present is to impress upon our grain farmers the many advantages of cultivating a variety of products, instead of depending, as they do now, almost solely on grain. They will, in this way, find farming not only a much more agreeable and attractive, but a far more lucrative employment. We have taken considerable pains to inquire into the relative profits from land devoted to grape culture and that of wheat, in some of the grain producing sections of the State. Yolo County, for instance, is one of the best wheat producing counties, and one that has the best facilities for moving that wheat to market. For a few years past, some of the more enterprising farmers in this county have been planting vines, until there are now a number of valuable vineyards interspersed with

the wheat fields, and a good opportunity is thus here presented for this investigation. We will state it here, as a fact, that the grape crop throughout the State, for eighteen hundred and sixty-nine, was much less than for eighteen hundred and sixty-eight, and other former years. The season was one of the most unfavorable for this crop ever known. In Yolo County the yield was but one-half—the average this year being about three tons per acre, against six tons last year. The entire grape crop of the county this year is estimated at a thousand tons, about four hundred tons of which were sold at twenty dollars per ton, and were taken from the county for distilling purposes. The balance were made into wines and brandies within the county, and sold or used for other purposes. Taking those sold as the average value of the crop, we have sixty dollars per acre as the gross proceeds of the vine. The gross proceeds of the wheat crop per acre, on the same quality of soil, did not exceed twenty-five dollars. This shows a decided advantage of grape culture over wheat, even when the grape crop was but one-half its usual quantity and value. This great advantage of immediate profits is not the only consideration in favor of grape culture over wheat. While the cultivation of wheat exhausts and depreciates the soil, grapes tend to recuperate and enrich it. While the wheat crop grows less and less annually, that of the grape is constantly on the increase. While wheat requires annual planting, grape vines, once planted, will continue to bear fifty or more years.

Again, our product of wheat is already largely in excess of home consumption, and we are obliged to seek a foreign market for the surplus and pay heavy freights, interest and insurance before it reaches the consumer. Not so with the products of the vine. Of these we are still large importers to supply our home consumption. The value of wines and liquors imported this year reaches nine hundred and eighteen thousand five hundred and thirty-six dollars.

Another consideration: The most valuable commerce is that between different portions of our own country. Thus our own country will reap all the benefits, and there are no duties, either import or export; while the market for our surplus wheat is in foreign countries, we will have a market for all our surplus wines and brandies for a long time to come in the Atlantic States.

In the above estimates we have considered the grape product only with reference to its value for wines and liquors. The culture of the best varieties for the table and for the Eastern markets will be found much more profitable. This year the Muscat of Alexandria vines, within an easy market distance from San Francisco, have netted their owners at the rate of from three hundred dollars to six hundred dollars per acre. The Flame-colored Tokay have netted, in one instance, over one thousand dollars per acre, while the Black Hamburg, Black Malvoisie, Golden Chassales and White Tokay have netted over four hundred and fifty dollars. The great vineyards of the common California grape have paid their owners at the rate of one hundred dollars per acre clear.

In this connection we would remark that no more favorable time for commencing vineyards has ever been presented in California. By the railroad overland our market for the best table varieties has been increased a hundred fold, and, as our wines become more generally known, they will be more generally used, to the exclusion of those of foreign brands. We would say, then, to those who have land adapted to the culture, plant vineyards.

FRUITS.

California is one of the best fruit producing countries in the world. The quality of our fruits is unsurpassed, and we grow as great a variety as any other portion of the earth embraced in an equal area of territory. The common varieties—such as apples, peaches, pears, plums, apricots and nectarines—are produced in quantities more than equal to home consumption, and yet we are large importers of dried fruits of some of these same varieties. Our importations of dried apples for this year will not be less than six thousand barrels. And this in the face of the fact that hundreds of thousands of bushels of apples, far superior in quality to the imported, were allowed to go to decay under our trees. Such facts are not much to the credit of our orchardists, and we hope for better management in the future.

EXPORTING GREEN FRUITS.

All fruits in the Atlantic States seem to be decreasing both in quantity and quality. The cause of this fact can only be explained on the supposition of a gradual change of climate, unfavorable to fruit culture. These facts, in connection with the fact that fruits of the same varieties ripen earlier in our State than there, may be turned very much to our advantage if we can lay ours down in the Eastern cities in good order and at cheap freights. This experiment has been tried this year, with varied success. Some shipments have gone through in fine condition, and have paid well, while others have been almost an entire loss to the shippers. There has been about three hundred tons of pears, apples, grapes and plums sent out of the State for the East, by railroad. The opinion of shippers is, that fruit of all kinds, for so long a trip by rail, should be packed in smaller boxes. Say for pears and apples, packages from ten to fifteen pounds, and for grapes not exceeding five pounds should be used. While pears and apples should be picked and shipped before they are quite ripe, grapes should be fully ripe before taken from the vine. Pears and apples should be picked in the middle of the day and exposed to the sun at least one day before packing. Grapes should also be picked in the middle of the day and allowed to lay in heaps until they have passed through a sweating process, and then thoroughly dried and exposed to the sun at least a day before packing. With care and experience we have no doubt the business may be made highly remunerative, and will encourage the greater production of varieties adapted to this trade. The average price netted for pears in good order was about fifteen cents a pound. Grapes of Muscat of Alexandria, Flame-colored Tokay, and Black Hamburg varieties, netted thirty cents, while the native California grape brought twenty cents a pound.

ORANGES, LEMONS, LIMES AND OLIVES.

All these fruits, of excellent quality, have for many years been produced with good success in the south coast counties of the State. A few isolated trees of all these fruits have, within a few years past, come into bearing in many other localities. The quality of the fruit and the bearing habits of the trees show conclusively that nearly all portions of the State are well adapted to their successful cultivation. These fruits can all be shipped great distances without injury, and it is believed that they can be cultivated here for the markets of the Atlantic States with good

success and profits. Compared with other fruits, the trees are slow in coming into bearing; but when once grown, they live and bear to a great age. The oranges, lemons and limes produced in Los Angeles are mostly natural fruit, and the trees bear at about seven years of age. At ten years they bear on an average, about one thousand five hundred specimens of fruit each. They are worth, in the orchards, from two to three dollars a hundred. About one hundred trees are generally planted on an acre of land. By this statement it will be seen that the product of an acre of land planted with oranges or lemons is about four thousand five hundred dollars a year.

It would probably take California fifty years to supply the demand for our own and the Atlantic States, and the States constantly coming into existence in the interior of the country, if her fruit growers were all to enter into the business with energy. The subject is worthy the consideration of our people.

BERRIES.

The cultivation of the different varieties of small fruits is being engaged in, in some portions of the State, very extensively, and with satisfactory results. It is estimated that the product of the different varieties for this year is as follows: Strawberries, one thousand tons; blackberries, two hundred and ten tons; raspberries, one hundred and sixty tons; currants, two hundred tons. The average price of strawberries and blackberries has been about ten cents per pound to the producer; that of raspberries and currants, about thirteen cents. At these rates, the value of the product of the State has been about three hundred and thirty-five thousand five hundred dollars. Alameda and Santa Clara Counties are by far the largest producers of these berries, and San Francisco is the principal consumer, though they are shipped to nearly all portions of the State accessible by railroad. The foot-hills, both of the Coast Range and Sierras, are well adapted to the cultivation of these berries, as well as most of the valleys The berries of the foot-hills are, however, much higher flavored and more delicious fruit than those of any of the valleys. It is a notable fact, that while these excellent and healthful berries are among the products of agriculture, the farmers of the State, as a class, are among the smallest consumers. Every farmer should and could raise his own fruits and berries of every description, and enjoy them.

CRANBERRY CULTURE.

We believe that this valuable berry has never been cultivated to any extent in our State. There is no doubt, however, that their cultivation can be made a successful and very profitable business. The cranberry requires an alluvial soil, with water near the surface, and flourishes best in a mixture of peat or vegetable mould and a coarse washed sand. In the Atlantic States the best mould is found and prepared by working and levelling, and then the sand, frequently from a great distance and at great expense, is carted onto and mixed with it. In our State we have thousands of localities, embracing thousands of acres, where this work is already done by the washing of the very best quality of sand from the mines over marsh holes and soft tule beds. Good land in the Atlantic States for the cultivation of the berry is worth from one to three thousand dollars per acre, and a single crop of berries has, from one acre, been known to yield to its owner the nice sum of one thousand dollars,

the fair average yield being from three hundred to five hundred dollars in value. The cranberry crop of New Jersey for this year is valued at two million five hundred thousand dollars. We cannot state the annual consumption of our State, but it is very large, and its supply by home production would be an item of profit to individuals and value to the State. The cultivation is being commenced in Alpine County, and should be in many others.

VEGETABLES AND VEGETABLE GARDENS.

It is the pride and boast of every Californian that our markets are well stocked with vegetables of nearly every description known and valued in the world, and of the most superior quality, every month in the year. It is one of the highest recommendations of our climate and State, that these vegetables are all grown in the open air, and are afforded at prices so low as to be within the reach of all. With the exception of potatoes, they are produced mostly by our foreign population, such as Portuguese, Italians, Germans and Chinese, in the vicinity of the towns and cities, who make gardening a specialty. They are picked each day, and are brought into market in the early morning, when fresh and inviting and healthy. Potatoes are grown extensively in the coast counties, in the river bottoms and in the mountain districts. The best potatoes in the State come from the Sierra Nevadas, at about the altitude of Dutch Flat, or three thousand five hundred feet.

One of the most remarkable features connected with California agriculture is the almost entire absence of vegetable gardens in the best agricultural districts. Farmers, whose tables, above all others, should and could be well supplied, the year round, with the greatest abundance of delicious vegetables, fresh each day from their own gardens, are notoriously the poorest supplied with these luxuries of any other class of people in the State; and, strange to say, what they do have generally come from the vegetable dealers in the towns and cities, and are stale and uninviting. Vegetable peddlers buy their supplies in the towns and cities, and make their regular trips among the grain raisers in the country to sell them. This anomalous state of affairs is brought about by two causes—first, that the soil of our grain land is not so well adapted to the production of vegetables as grain, and next, to an indisposition on the part of the farmers themselves to cultivate in the garden. Time to do so is certainly not wanting, for garden work could and should be done in the winter here, and early spring, when the other work of the farm is slack. Half an acre of ground, properly prepared and judiciously cultivated in a variety of garden produce, would yield more real profit to the farmer than five times that amount sown to grain. It would employ his idle moments, stimulate him to useful experiments, and be the means of bringing up his boys to habits of industry, besides furnishing his table with a constant supply of health producing luxuries, to which, under the present system of management, it is a stranger. The man who cultivates a garden well insensibly becomes a good and successful farmer, and he who neglects to cultivate any garden at all, just as insensibly, but surely, becomes a slovenish and unsuccessful farmer. Besides, if there was no other reason why our farmers should all have gardens, both for flowers and vegetables, attached to their houses, the fact that they contribute so much to the general home appearance and beauty of a place, and to the country at large, would be a sufficient argument in their favor. They would enhance the value of land in the

country, and give the appearance of thrift and happiness, where now their absence is indicative of negligence and discontentment. A good garden is an index of a good farm—a key to agricultural prosperity. Could we induce our farmers to cultivate gardens, we would have some hopes that the day of burning straw and stubble had passed, and that the time had come when a diversified and prosperous agriculture was about to be inaugurated in our State.

CALIFORNIA GRASSES.

At the time of the great influx of people into California, her vast plains were covered with wild oats, annually volunteering and producing an abundance of food for stock the year round. Along the river bottoms not covered with timber the soil was well covered and sodded with native nutritious grasses, so that the whole country was well calculated for the purposes to which it had been most exclusively devoted—stock raising. Cultivation has destroyed the oats on the plains and the grasses on the river bottoms to such an extent that when not under crops, weeds are the natural and almost the only product of the soil. The long dry seasons recurring every summer kill out all ordinary varieties of grasses and clovers, such as timothy, red top, red and white clover, etc., whose roots do not extend deep enough into the soil to place them beyond the effects of the annual drouths. Hence it has been a matter of great moment to find and introduce some varieties of grasses that can be substituted for the original prevailing native grasses of the country. It was very desirable to find varieties that would take deep root and thus become perennial. Experiments have been going on by some of our enterprising farmers and scientific men, encouraged and assisted by this Board, with many different kinds, both native and foreign, but generally with but poor success, the annual drouths proving too severe for a continuous growth and even for perennial life, except as to one variety, the seed of which was imported from Chile and hence called

CHILE CLOVER, OR ALFALFA.

This clover seems to be especially adapted to the peculiarities and wants of the country. It has been thoroughly tested for years, both on the rich alluvial soils of the river borders and on the higher lands of the plains, and has proved satisfactorily successful in all localities. Its roots strike deep into the soil, in the form of what we generally term tap roots. On the borders of some of our rivers they have been known to penetrate seventeen feet below the surface. On the uplands, deeply plowed and well tilled, they will find constant moisture sufficient to produce rapid growth the year round. For hay this clover, when cut in proper condition, when in bloom, is of good quality for stock of all kinds, and especially for milch cows.

It will produce three and four crops a year—say in April, May, June and July—averaging from a ton to a ton and a half at each cutting. After the last crop it continues to grow rapidly, and furnishes a very large amount of feed for stock, as pasturage, the balance of the year. We have the testimony of good dairymen, to the effect that cows taken from the native grasses, and pastured on fields of Chile clover, will increase in the product of milk and butter, or cheese, from sixty to

seventy per cent. Also, that one acre of land, well seeded with it, will produce more pasturage in a year than ten acres of the same quality of land will in the native grasses.

It is the opinion of our best sheep raisers, that sheep grazed on this clover, in a constant green condition, as we have seen it may be kept, will not be troubled with the diseases of the skin so prevalent among the flocks of this country, when allowed to roam over our dry plains for a scanty subsistence during the summer months; also, that upon such pasture the practice of semi-annual shearing may be dispensed with. This practice has been adopted here for the purpose of remedying the diseases referred to, and if it can be dispensed with, it will add materially to the value of the wool clip of the State, and dispense with half the present cost of shearing. Our wools now, besides being rendered less valuable, from the shortness of the fibre, arising from the practice referred to, suffer materially in quality, from the poor condition to which our flocks are annually reduced by scarcity of pasturage. This may be remedied, also, by seeding down their ranges with this evergreen clover. Comparatively a small area of land will be required to feed our present flocks, so that, by adopting the course suggested, our sheep raisers could curtail their ranges or proportionately increase their flocks, while, at the same time, they would increase the condition and profits of their flocks. We submit the above facts and considerations for the benefit of all classes of agriculturists. The grain grower may find in them an inducement to cease the exclusive production of wheat, and turn a part of his land and a part of his attention to the dairy business and wool and mutton growing. By so doing he may restore his exhausted soil to something like its normal state of productiveness, and, in the meantime, add very much more to his individual savings and to the general wealth of the country. To the dairymen they may suggest the readiest means of increasing their own incomes, by appropriating to themselves a part of the immense sums of gold now shipped from the State to enrich their Eastern competitors. Our importations of butter and cheese for the past ten years have cost us over a million and a half of dollars annually, and, now that the railroad has brought us into more direct competition with the dairymen of the Eastern States, we must go into the business with more energy, and conduct it with better tact, or their share of its profits will increase and ours decrease.

Our wool clip for the past season is, in round numbers, fifteen million five hundred thousand pounds, an increase since eighteen hundred and sixty-seven of about fifty per cent; but our pasturage is growing short and our ranges are being curtailed by the occupancy of lands for other agricultural purposes. Our sheep men must decrease their flocks or adopt a change in management.

The following facts indicate that something of this kind is becoming necessary: The increased production of wool for the five years, from eighteen hundred and sixty-three to eighteen hundred and sixty-eight, was at the rate of one million five hundred and ninety-one thousand three hundred and forty-two pounds per year, while the increase of the clip of eighteen hundred and sixty-nine, over eighteen hundred and sixty-eight, was but five hundred and twenty-two thousand six hundred pounds. This want of increase in the last year is not owing to a want of increase in the number of sheep, but rather to an insufficiency of food.

In considering such change, the facts above presented may be of benefit.

DISEASED CATTLE.

In our last biennial report we called the attention of the Legislature to this subject, and suggested, that as it was well known that there had existed for several years back a disease among the cattle of Texas, called the Texan fever, that this disease was very destructive wherever it spread, and that there was danger of its being introduced into our own State with droves of Texan cattle, proper legislation should be had to avoid the danger. We repeat those suggestions, and would now enforce them by stating as a fact what what we then could state only in anticipation, viz: That large droves of cattle are already arriving in this State from Texas. Though no disease is reported among them, yet, coming from an infected country and being in the hands of those whose interest it would be to keep such reports from the public if disease did really exist, they should be watched with vigilance. While we cannot interfere with commerce between the States, we can protect ourselves or our property, our cattle, from exposure to contagious disease, and when danger exists it becomes our duty to do so.

FISH BREEDING.

In some of the New England and Middle States the breeding of fish in artificial ponds or lakes has become not only a very pleasant but valuable industry. In some instances it has been so profitable that the land covered by the water of these lakes, and devoted to the production of fish, has yielded, within two years from the time the lake was made and fish introduced, at the rate of one thousand two hundred dollars per acre a year.

California presents almost an endless number of localities where lakes can be very cheaply made, and stocked with the finest varieties of trout from our mountain lakes and elsewhere, and a profitable business thus introduced. Such localities may be found all along the various natural and artificial water-courses leading down through the foot-hills of the coast ranges of the Sierras. Artificial lakes or ponds for this purpose may also easily be made in those valleys where artesian wells furnish a constant flow of living spring water.

TREE AND FOREST CULTURE.

We have frequently called the attention of our agriculturalists to this subject, and have at different times urged action in its behalf by the Legislature. No more important subject can be named for legislative encouragement or for energetic action on the part of our people. We are all interested in whatever affects the comforts of individuals and the prosperity of the country. The subject of a plentiful supply of lumber and wood for the various purposes of life is one that we cannot much longer neglect. Whoever takes the trouble to look this subject fully in the face, and reflects upon the future of California, must feel as we do, that something should be done, and that immediately, looking to the substitution of new forests in the place of the old ones in our State, now so rapidly being consumed and destroyed. A full discussion of this subject cannot be entered into in the short space allowable in a mere report, where so many subjects of interest claims attention. But we propose to notice some facts, and make some suggestions, which may lead to further investigation, and we hope to energetic action.

THE TIMBERED PORTIONS OF CALIFORNIA.

We have become so accustomed to speak of the forests of our State—of our "Big Trees," as the grandest and most majestic in the world; we hear so much of the vast quantities of timber and lumber being shipped from those forests, to supply the nations of the earth with masts and other heavy timbers for ship building and other purposes, that we have thoughtlessly come to regard our supply of these materials, and of materials for fuel, as practically inexhaustible. The facts are quite different. Although the forests we have are properly a subject of State pride, they are as properly a subject of State protection. California is far from being a well timbered country. Nearly all the timber of any value for ship and general building purposes, or for lumber for general use, is embraced within small portions of the Coast Range or the Sierra Nevada districts. Redwood, the most valuable timber in the State, and probably in the world, taking all its qualities into consideration, is principally confined to the counties of Mendocino, Sonoma and Santa Cruz. Monterey, Santa Clara and San Mateo contain but small tracts each, covered with this valuable timber. Humboldt, Trinity, Klamath and Del Norte embrace nearly all the balance of the timber of value in the Coast Range. It mostly consists of an inferior or hybrid redwood, spruce and pine. The lumber district of the Sierra Nevada is principally embraced in the counties of El Dorado, Placer, Nevada, Sierra, Plumas and Siskiyou. Calaveras, Tuolumne and Mariposa contain only scattering clusters of valuable timber, though some of the largest and finest trees in the world are found within their borders. The timber of this district is mostly different varieties of pine, spruce and cedar. The other mountain counties of the State afford very little timber of any account for building purposes or for lumber. The agricultural counties, as a general thing, have only narrow strips of timber along the water courses, consisting mostly of scrub oak, cottonwood, sycamore and willow, of but little general value, except for wood. The surface of our best timbered counties is not, in general, half covered with valuable timber. It is therefore safe to estimate that not over one-twentieth of the surface of the State is covered with forests containing trees valuable for timber or lumber.

THE CONSUMPTION AND DESTRUCTION OF FORESTS.

It is now but about twenty years since the consumption of timber and lumber commenced in California, and yet we have the opinion of good judges, the best lumber dealers in the State, that at least one-third of all our accessible timber of value is already consumed and destroyed! If we were to continue the consumption and destruction at the same rate in the future as in the past, it would require only forty years, therefore, to exhaust our entire present supply. This, in itself, seems like a startling proposition, but let us look a little further and we shall find truths and considerations more startling still. In the twenty years to come we will probably more than double our population, but let us assume that we will only double it. As a general rule, in a new country, the consumption of timber increases in about double the ratio of population. Thus while the increase of population of the United States, from eighteen hundred and fifty to eighteen hundred and sixty, was thirty-five and fifty-nine one-hundredths per cent., the increase of the consumption of lumber was sixty-three and nine one-hundredths per cent. Upon

this basis and rule, the whole available lumber of our State will be consumed and destroyed in twenty years, instead of forty.

We must also take into consideration, in this connection, the fact that we are now just entering upon an era of active public improvements, all requiring the use of heavy timber and lumber.

The building of railroads, bridges, warehouses, wharves, factories, bulkheads and the timbering of mines, will probably consume ten times as much lumber within the next twenty years as has been consumed for these purposes in the past twenty. The building and equipping of railroads may be considered a new and special element in the increased consumption of lumber, as this business in our State has really but just commenced.

One of the worst features of the settlement of new countries by Americans is the useless and criminal destruction of timber. In our State this reckless and improvident habit has been indulged in to an unprecedented extent.

Thousands upon thousands of the noblest and most valuable of our forest trees in the Sierra Nevada districts have been destroyed without scarcely an object or a purpose, certainly with no adequate benefit to the destroyer or to any one else. This practice cannot be condemned in too severe terms; it cannot be punished with too severe penalties.

TIMBER NORTH AND SOUTH.

South of California, on the Pacific coast, there is but very little timber or wood of any description. The Pacific South American States are, in fact, dependent on us, and the coast States north of us, for nearly all their lumber. They have been drawing heavily from these sources to rebuild their wharves and public works destroyed by the earthquakes of eighteen hundred and sixty-eight. On the north, Oregon, British possessions and Alaska are generally well timbered. We have, for the past five years, been obtaining large quantities of lumber from these countries, and now that the Central Pacific Railroad has advanced the freight on lumber from our own mountains fifty per cent. over former prices, our trade in this direction will still increase.

While these countries contain a large supply of very excellent timber, this supply is by no means exhaustless. At this time almost the whole world is drawing its supply of heavy timber from the Northern Pacific coast.

England, France, Australia, China, Japan, South America, Mexico and the Sandwich Islands are all, more or less, engaged in securing their wants for ship building and other heavy works from these valuable forests. With the heavy drafts on these countries, added to their home consumption, it is not probable that the supply will hold out much longer than that of our own State.

HARD TIMBER.

In the above statements and estimates, we have only taken into account such timber as is fitted for building and for lumber for general purposes. As to hard wood, fit for wheelwright purposes and agricultural and other machinery, we may say there is none of it on this coast. We have always either imported the machinery or the material to make it of, from the Atlantic States. For ornamental work we have a limited supply, the California laurel being very superior.

TIMBER FOR FUEL.

After what has been said above, we hardly need to comment on the scarcity of timber in the State, for the general purposes of fuel. Taking all the agricultural counties in the State together, including the cities and towns within them, and considering the probable increase of population, it is very doubtful whether, under present management, they will be able to supply their own demands for fuel for ten years to come. While it will pay, in case of necessity, to freight lumber and heavy timber great distances by land, and to ship it by water half way round the globe, it becomes very burdensome and oppressive to all classes of the community to be compelled to convey wood, for domestic and manufacturing purposes, comparatively but small distances. To illustrate this proposition, we need only to mention the fact, that while there is within an area of twenty miles from either of the cities of Marysville, Stockton or Sacramento, a plenty of wood for a year or two's supply, and it costs but two dollars a cord to have it cut, yet the present price of wood in each of these cities is about ten dollars a cord. Even at this high price, the owner of wood land thirty miles from Sacramento, on the line of the Central Pacific Railroad, can make that wood net him only one dollar and a half a cord, delivered in the city. These facts show how extremely expensive and oppressive it would be to undertake to supply the cities of the State with wood from the distant mountains. And yet what other resource will be left, a very few years hence? California should, at no distant day, become one of the greatest manufacturing States of the Union, but where will we obtain the fuel with which to generate the steam that propels the machinery? Again, a new element of calculation on this subject has just been introduced among us, and will grow rapidly in the future. We refer to the consumption of fuel by the railroads. There is now in the State, completed and in operation, about seven hundred miles of road. In a year from now, it is safe to say, there will be over a thousand. Call it one thousand even. It requires one and three-fourths cords of wood, with an ordinary train, to drive an engine twenty-five miles. Now assuming that an average of ten trains a day will then be running over this one thousand miles of road, for three hundred and twenty days in the year, and we have a distance of three million two hundred thousand miles travelled in the year. As each twenty-five miles of distance travelled will consume one and three-fourths cords of wood, the consumption of one thousand miles of road will be two hundred and twenty-four thousand cords per year. In twenty years we will probably have four thousand miles of road completed, averaging twenty instead of ten trains per day, and consuming one million seven hundred and ninety-two thousand cords of wood per annum. This, added to the increased consumption for all the other purposes of life, will make rapid inroads into the few sparsely wooded portions of our State, if there should indeed be any trees left standing at that time.

EFFECTS OF SCARCITY OF LUMBER AND WOOD.

The first effect of a scarcity of lumber and wood will be to enhance the cost. We have already noticed the high price of wood delivered in our cities. Lumber has not enhanced very much in value for the last ten years, but indirectly. The cost of cutting, manufacturing and getting to market has been decreasing, while the cost to the consumer has remained the same. It is the opinion of dealers that it will soon appre-

ciate in value very materially. It cannot be otherwise, as we have shown that the demand will increase rapidly and the supply decrease. Even now the cost and scarcity of these articles is having an oppressive effect on every industry in the State. The expense of agricultural implements and tools here, over their cost in the Eastern States, is already operating as a serious drawback upon the thrift and profit of our farmers, brought in close competition, as they now are, with their neighbors of the Western Atlantic States. The cost of lumber for building and fencing, in most of our agricultural districts, obtained, as it is, at a distance of hundreds of miles away, is even now so great that our farmers are among the poorest housed people of any agricultural community in the Union, where the country has been settled an equal length of time. Their crops and stock are but poorly sheltered, if at all, and their farms are worse than poorly fenced. To the expense of lumber, more than to any other cause, must be attributed the general dilapidated appearance of our agricultural districts. Efforts to improvement in these respects lead to a forced system of farming; too frequent cropping, and little or no nursing of the land; to that sameness of production which we have had cause so severely to condemn. The cost of lumber and of wood is already discouraging every mechanical, every manufacturing, and every commercial industry of the State, for the use of these articles is in some way an important element in them all. The advancement of all our towns and cities in building and improvement is being even now retarded very much, directly and indirectly, by the cost of these necessary articles of life. The cost of houses enhances the prices of rent. The price of rent and cost of wood add materially to the general expenses of living, and these in turn enhance the price of labor of every kind, and consequently decrease the production and retard the general prosperity and improvement of the cities and country. If this be the case now, when we are so young and our population so thin, when the demand for these articles is increased twenty fold and the supply decreased in the same ratio, who can depict the condition of our State?

CLIMATIC EFFECTS OF THE DESTRUCTION OF FORESTS.

We have estimated that not over one-twentieth part of the surface of our State is now covered with heavy timber, and we believe we are within the bounds of truth when we state that not over one-eighth of the entire surface is covered with trees of any description whatever. It is the opinion of the best judges, founded on historical facts, and a long series of observations and experiments, that at least one-third of the surface of any country should be forests. That this relation between forest and cultivated land will secure the most advantageous conditions of climate and the greatest amount of productions for the sustenance of human and animal life. Fire has undoubtedly been the original and active cause of so great a proportion of prairie or untimbered land within our borders. Being once destroyed, the consequent climatic condition of the country has prevented a re-production of the original forests. Nature now, unassisted by man, can never effect that re-production without some great physical revolution that will change the whole face and features of the country. That the nakedness of the earth's surface is the cause of the extreme wet and dry seasons in our State, and particularly of the destructive floods to which the valleys are subject, can not for a moment be doubted by any one at all acquainted with the laws of nature and the agency of those laws in the production and modification of

climates through the forests of a country. For want of space we cannot enter into a full discussion of this important branch of this subject, but will only state a historical fact in the language of one of the best authors who has ever written on this subject.

Hon. G. P. Marsh, speaking of the effect of the destruction of forests upon the different countries of the earth, says: "There are parts of Asia Minor, of Northern Africa, of Greece, and even of Alpine Europe, where the operation of causes set in action by man has brought the face of the earth to a desolation almost as complete as that of the moon. The destructive changes occasioned by the agency of man upon the flanks of the Alps, the Appenines, the Pyrenees and other mountain regions in central and southern Europe, and the progress of physical deterioration, have become so rapid that, in some localities, *a single* generation has witnessed the beginning and the end of the melancholy revolution."

Words could not more truthfully describe the effects produced by similar causes in some portions of our own State. Mr. Marsh continues: "It is certain that a desolation like that which has overwhelmed many once beautiful and fertile regions of Europe awaits an important part of the territory of the United States, unless prompt measures are taken to check the action of destructive causes already in operation." This last remark applies with greater force to a large share of our own State than many of us are aware of.

NATURAL REPRODUCTION OF FORESTS.

In countries where rains are of frequent occurrence during the summer season, keeping the surface of the soil moist, vegetation, however delicate and tender, once started in the spring of the year, continues to grow until checked by the succeeding autumn or winter. By this time the roots have obtained such a hold on the ground as to secure continued life, unless destroyed by artificial causes. Not so in our State. The dry season here follows so rapidly after the wet and germinating period, that, without irrigation or cultivation, tender and delicate plants, like young trees of all kinds grown from seed lying on the surface, as they fall from the parent trees, are almost always dried up and destroyed before they are four months old. Hence it is that a section of country once stripped of trees and shrubbery, in our State, always remains naked. Once a prairie always a prairie, until art comes to the assistance of nature. Hence it is that wheresoever our forests have been cut down and cleared away, allowing the rays of the sun to fall directly on the soil, so few young trees, or trees of the "second growth," are to be found.

REMEDIES FOR EXISTING AND IMPENDING EVILS.

The remedies for existing and impending evils, some of which we have briefly noticed as growing out of the consumption and destruction of our forests, are two fold. The one preventive and the other restorative. Much may be done in various ways and through various sources, to discountenance and prevent the useless and careless destruction of timber and wood. Whatever can be done should be done at once. No means and no opportunity to use pursuasion, argument or law to put a stop to this evil should be neglected. The influence of individuals, of associations, of the various industrial organizations, whether agricultural, mechanical or commercial, should be exerted in calling attention to this subject and

warning the people of all classes and in all portions of the State of the impending consequences of the useless and improvident destruction of timber and wood. The press should take the matter up, and every newspaper in the State should give it special attention, and endeavor, by the presentation of facts, by argument and persuasion, to lead the people to think on the subject, and to teach them prudence and economy in this particular. The Legislature should exert its utmost influence and authority to dissuade and prevent the continuance of practices so threatening to the prosperity of the commonwealth. It should call the special attention of the General Government to this subject, and ask it to protect the timber and wood on the public lands within the State from unnecessary destruction. If any timbered lands belong to the State or should come into its possession, such as the school lands in the timbered and mining districts, special care should be taken to see that waste be not committed thereon. All laws upon the subject of fencing should be framed with an aim to do away with the necessity of using timber for this purpose as much as possible. By these means much good may be accomplished in checking the rapid destruction of our forests and wood lands, but a still greater field for the exertion of the same influence is to be found in the inauguration of a system of reproduction by the extensive cultivation of

ARTIFICIAL FORESTS.

Individuals who feel and see the importance of the subject, and who have or can procure the land, can do much by example and by pressing the matter on the attention of their neighbors. Industrial societies, by calling the attention of the people to the importance of planting shade and forest trees, and offering premiums and bounties for the same, can do more. The press, too, can exercise a powerful influence in this direction by showing its importance in the amelioration of climate, the enhancement of productions, and in beautifying and adorning the country, as well as by presenting the forcible arguments in its favor, of convenience and profits. But the Legislature can, by proper legislation, accomplish more in this important work than can be accomplished by all other influences combined, and to this source principally must we look for the inauguration and accomplishment of this great work of reproduction of forests and woodlands within our borders. Liberal bounties or premiums should be offered for the cultivation of forests and woodlands on every farm or homestead throughout the agricultural portion of the State, and means should be taken to secure the reproduction of the native forests of the mountains. We most earnestly urge that ready action on this subject be had, that the important work may be commenced the present season, for while it will require thousands of years to reproduce a full-grown forest tree, the present generation will probably witness the destruction of all we have left of those magnificent forests with which Nature has provided us. Other States are engaging in this enterprise with energy and success, and that, too, when the necessity is not half as great as is ours. New York, one of the best timbered States in the Union, and one that has furnished the world with more lumber than any other State, is offering premiums and bounties, through her agricultural societies, for the cultivation of trees in artificial forests. Iowa has already fully inauguratad the important enterprise, and beautiful and luxuriant groves of forest trees may now be seen ornamenting a large portion of

the farms throughout nearly every county in the State. Nebraska, too, by legislative action in eighteen hundred and sixty-five, offering bounties for rows of ornamental shade trees along her highways, and for groves of forests planted by the acre on private lands, is encouraging this valuable industry, while the Constitutional Convention of Illinois is discussing the propriety of engrafting provisions in the fundamental law, requiring its encouragement by the several counties of the State. On the continent of Europe the several Governments have taken hold of this subject and made it a national interest. There already the artificial forests rank among the most valuable Government property. If we are not careful, Europe will, in a very few years, own larger forests of our valuable redwood trees than California ever could boast of. Germany alone has already exported from this State thousands of dollars worth of the seeds of these valuable trees, and the young forests growing from them are the pride of that country.

VARIETIES OF TREES.

Upon this subject there are various opinions as to what kinds should be planted. It is probably well that this variety of opinion exists, as it will likely lead to the planting of a greater number of kinds of trees, and this is just what will lead to the greatest benefits. Experiments have already fully demonstrated that nearly all varieties of trees found within the extensive and varied territory of the United States can be successfully grown in any particular locality. Trees from the extreme South grow thriftily in the latitude of Boston, though not known in the native forests there, and so the contrary. The different varieties of pines from the summits of the Sierras grow well in our valleys, and the trees of the valleys do well in the mountains. The sugar pine from Siskiyou, the big trees from Calaveras, the redwood from Santa Cruz, and the laurel from Mendocino, may all be seen growing with equal luxuriance in the different gardens of Sacramento. Nearly all the varieties of trees found on the Eastern continents or in South America, have, by actual experiment, been proven to flourish well here, so that artificial forest culture has the advantage of concentrating all the useful varieties of trees in the world, and will thus save the great expense of freight on lumber of particular kinds from one country to another. It is also a mistaken idea that valuable varieties of hard woods grown here will be less valuable than when grown in their native countries. Locust and white mulberry trees grown within two miles of Sacramento are, and have been so proven by experiment, as valuable as when grown in New York or Michigan.

In the commencement of a forest, we would only recommend that those varieties of seeds or cuttings of plants that can be readily obtained be planted at once, so as to make a beginning—to form a nucleus, and as others can be procured, let them be added.

The seed of the redwood and of the different varieties of pines and cedar, as well as of all nut-bearing trees, can be gathered in almost any quantity desired, in their season. The cottonwood, the different varieties of mulberry and poplars, can now be obtained in great quantities, and at cheap rates, or they can be propagated from slips and cuttings.

THE WORLD'S FAIR IN THE UNITED STATES.

The probabilities are, that before the Legislature assembles again

there will be held, somewhere within the United States, an international exhibition of the products of the earth. Such an event should be made the occasion of California, and no pains or money should be spared to place before the world, on such an occasion, a truthful exhibition of the products and resources of our State. We would suggest that proper provision be made by the present Legislature to secure this object; also, that provision be made for the appointment of a competent person as a State Commissioner, to visit such exhibition on behalf of the State, and see to and explain our exhibition, and to represent the interests of the State in an industrial point of view generally. Also, to report on the progress of the industries of the world, as shown at the fair. The results of such a course on our part could not fail to be greatly to the advantage of our State in many ways, and not the least of such advantages would be the impetus it would give to a desirable immigration to our State.

CONCLUSION.

We have endeavored, in this communication, faithfully to point out some of the defects of our present system of agriculture, though in doing so we have been compelled to say some unpleasant things of some of our farmers and some things disparaging to the credit of our State. We have also endeavored to suggest what we believe to be the true remedies for the defects and evils, as they exist. One particular object has been to show the great advantages to be derived from a diversified agriculture and to call attention to the introduction and cultivation of new and valuable products. We now ask the Legislature to give these matters the benefit of their moral influence and the impulse of material encouragement. We will also suggest that this policy, properly commenced and faithfully carried out, will prove to be the most effectual and most economical method of increasing the population of the State, and the surest and best way of rendering that population, when here, of service to themselves and of benefit to the commonwealth.

A great variety of paying industries will most assuredly attract a valuable immigration and guarantee their prosperity and the prosperity of the State.

In the volume of transactions of the society for eighteen hundred and sixty-eight and eighteen hundred and sixty-nine will be found much valuable information, and we recommend that provision be made for publishing the usual number for the use of the members and for free distribution.

Respectfully,

C. F. REED,
President State Board of Agriculture.

ROBT. BECK, Secretary.

COMPILATION OF LAWS

RELATING TO THE

STATE AGRICULTURAL SOCIETY.

A COMPILATION

OF ALL THE LAWS NOW IN FORCE RELATING TO OR AFFECTING THE STATE AGRICULTURAL SOCIETY.

AN ACT

TO INCORPORATE A STATE AGRICULTURAL SOCIETY AND APPROPRIATE MONEY FOR ITS SUPPORT.

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. There is hereby established and incorporated a society to be known and designated by the name and style of the "California State Agricultural Society," and by that name and style shall have perpetual succession, and shall have power to contract and be contracted with, to sue and be sued, and shall have authority to have and use a common seal, to make, ordain and establish, and put in execution, such by-laws, ordinances, rules and regulations as shall be necessary for the good government of said society, and the prudent and efficient management of its affairs; *provided*, that said laws, ordinances, rules and regulations shall not be contrary to any provision of this charter, nor the laws and Constitution of this State or of the United States.

SEC. 2. In addition to the powers above enumerated, the society shall, by its name aforesaid, have power to purchase and hold any quantity of land not exceeding four sections, and may sell and dispose of the same at pleasure. The said real estate shall be held by said society for the sole purpose of establishing a model experimental farm or farms, erecting inclosures, buildings and other improvements calculated and designed for the meeting of the society, and for an exhibition of the various breeds of horses, cattle, mules and other stock, and of agricultural, mechanical and domestic manufactures and productions, and for no other purposes.

And be it further enacted, That if, from any cause, said society shall ever be dissolved, or fail to meet within the period of two consecutive years,

then the real estate held by it, together with all the buildings and appurtenances belonging to said estate, shall be sold as lands are now sold by execution, and the proceeds deposited in the State treasury, subject to the control of the Legislature.

AN ACT

SUPPLEMENTAL TO AN ACT TO INCORPORATE A STATE AGRICULTURAL SOCIETY, APPROVED MAY THIRTEENTH, EIGHTEEN HUNDRED AND FIFTY-FOUR, AND AMENDED MARCH TWENTIETH, EIGHTEEN HUNDRED AND FIFTY-EIGHT.

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. The general prudential and financial affairs of the society shall be intrusted to a Board of Agriculture, to consist of a President and nine Directors, five of whom shall constitute a quorum.

[Amended section.]

SEC. 2. Said Board of Agriculture shall be elected at a general State Agricultural Convention, to be held at the Capital of the State, in the year one thousand eight hundred and sixty-three, in the month of March, and in the month of January every year thereafter, to consist of the life members and annual members of the State Agricultural Society and four delegates from each County Agricultural Society within this State, incorporated under the general laws of this State for such corporations, and an equal number from each District Agricultural Society, also incorporated under the general laws of this State for such purposes; said delegates to be chosen at the annual fair or annual meeting of each such society next preceding the State Agricultural Convention; *provided*, said convention to be held in March, in the year one thousand eight hundred and sixty-three, may admit any person or persons representing any of said County or District Agricultural Societies, as the convention may determine by a majority vote, whether such persons shall have been elected by their respective county or district societies, as provided in this Act, or not.

SEC. 3. The Board of Agriculture shall, at its first meeting after its election, be divided by lot into three equal portions (omitting the President), one portion to continue in office one year, one portion two years, and one portion three years; one-third of the number, together with the President, to be elected at the State Agricultural Convention annually thereafter. The Directors to hold office three years.

SEC. 4. The Board of Agriculture may, in the absence of the President, choose one of its other members temporary Chairman. They shall elect a Treasurer and Secretary, not members of the Board, prescribe their duties, fix their pay; and the said Treasurer and Secretary shall be subject to removal at any time by a majority of said Board.

SEC. 5. The Board of Agriculture shall use all suitable means to collect and diffuse all classes of information calculated to aid in the devel-

opment of the agricultural, stock raising, mineral, mechanical and manufacturing resources of the State; shall hold an annual exhibition of the industry and products of the State; and, on or before the first day of January of each year in which the Legislature shall be in regular session, they shall furnish to the Governor a full and detailed account of all its transactions, including all the facts elicited, statistics collected and information gained on the subject for which it exists; and also a distinct financial account of all funds received, from whatever source, and of every expenditure, for whatever purpose, together with such suggestions as experience and good policy shall dictate for the advancement of the best interests of the State; the said reports to be treated as other State documents are.

SEC. 6. The Board of Agriculture shall have power to appoint a suitable number of persons to act as Marshals, who shall be, from twelve o'clock, noon, of the day previous to the opening of the exhibition, until noon of the day after the close of the same, vested with all the powers and prerogatives with which Constables are invested, so far as acts or offences committed within or with reference to or in connection with the exhibition are concerned.

SEC. 7. The Board of Agriculture may, in its discretion, award premiums for the best cultivated farms, orchards, vineyards, gardens, etc.; *provided*, that said Board shall not audit, allow, or pay an amount exceeding one thousand dollars in any one year for travelling expenses of Visiting Committees, in examining said farms, etc.; *provided* further, that no person, except practical agriculturists, shall be appointed on said committees.

SEC. 8. It shall be optional with any to whom a premium is awarded to receive the article named or its equivalent (as affixed) in coin.

SEC. 9. The State Agricultural Society shall have power, at its first annual meeting after the passage of this Act, to make such alterations in its Constitution as shall make it conform to the provisions of this Act.

SEC. 10. All Acts or provisions in conflict with the provisions of this Act are hereby repealed.

SEC. 11. This Act shall take effect from and after its passage.

CONSTITUTION

OF THE

STATE AGRICULTURAL SOCIETY.

CONSTITUTION

OF THE CALIFORNIA STATE AGRICULTURAL SOCIETY.

ARTICLE I.—NAME.

SECTION 1. This society shall be called "The California State Agricultural Society."

ARTICLE II.—OBJECT.

SECTION 1. It shall be the object of this society to encourage the cultivation of the soil and the general development of all the agricultural resources of this State.

SEC. 2. To foster every branch of mechanical and household arts calculated to increase the happiness of home life.

SEC. 3. To extend and facilitate the various branches of mining and mining interests.

ARTICLE III.—MEMBERSHIP.

SECTION 1. *Annual Members.*—Any person who has, during the year eighteen hundred and sixty-five, or who shall, during this year or any subsequent one, pay into the funds of this society the sum of five dollars, may become a member of the same; such membership to expire on the thirty-first day of the following December.

SEC. 2. *Life Members.*—Any person may become a member for life, by the payment of fifty dollars; or, if already a member, by the payment of forty dollars, and shall thereafter be exempt from all dues and assessments.

SEC. 3. *Honorary and Corresponding Members.*—Any person whom the Board shall propose may be elected an honorary or a corresponding member, and shall enjoy, free of charge, all the privileges of the society, except voting and holding office.

SEC. 4. *Privileges of Members.*—Any citizen of this State, being a member of this society, shall be eligible to office, entitled to vote, and enjoy the free use of the library, under the rules of the same, and have free admission, accompanied by his wife and minor children, to all the exhi-

bitions of the society, and shall be permitted to compete for premiums in any or all departments.

SEC. 5. *Expulsion of Members.*—Any member who shall present for exhibition any article or animal which he is not entitled by the rules of the society to exhibit, or who shall attempt to deceive, or be guilty of a breach of good faith toward the society, may be expelled by a vote of two-thirds of the members present at any meeting of the society; *provided*, always, that no member shall be expelled unless written notice of the alleged offence shall have been served on him, or left at his usual place of residence, at least twenty days previous to the action.

ARTICLE IV.—OFFICERS.

SECTION 1. The officers of this society shall consist of a President and nine Directors, who shall constitute a State Board of Agriculture, five of whom shall constitute a quorum. They shall elect a Treasurer and Secretary, not members of the Board. They may also appoint annually, as officers of the Board, a chemist, a botanist, a meteorologist, a geologist, a metallurgist, an ornithologist and an entomologist, and define the duties of each. They may appoint such committees on the various departments of agiculture, mining and manufactures, either generally or for specific purposes, as they may deem important for the best interests of the State, and require such committees to report the results of their investigations to the Board at such times as may be named by them.

SEC. 2. *Duties of President.*—The President shall preside at all meetings of the Board and of the Society; shall have power to call special meetings of the Board, when necessary, and at the written request of ten members, may call extra meetings of the society; shall appoint all meetings not otherwise provided for; shall vote only at the election of officers, and in case of a tie; and shall sign all financial and official documents emanating from the society not otherwise provided for. In the absence of the President from any meeting of the Board or society, any Director may be called to the chair, and during such meeting, and for the completion of any business transacted or ordered at the same, shall have the same powers as the President.

SEC. 3. *Duties of Secretary.*—The Secretary shall conduct the correspondence of the society, keeping in a separate book copies of all letters written in the name or on behalf of the society, holding the same free to the inspection of any member of the society, at any regular meeting of the same. He shall also receive and file all letters addressed to the society, holding the same subject to the Board of Directors. He shall attend all meetings of the society and the Board, keeping a full record of the doings of each in a separate book, and shall furnish a copy of the proceedings of each meeting to the Committee on Publication within five days after the close of such meeting. He shall prepare and publish all notices of meetings; shall keep a roll of all standing committees, and call the same (noticing absences) whenever desired to do so by the Chair; shall sign all certificates of honorary and corresponding memberships, and forward the same to those entitled to receive them. He shall keep, in a book prepared for that especial purpose, the name and address of every member; shall prepare and sign all gratuitous or complimentary cards or tickets of admission; shall countersign all diplomas, certificates of merit, etc., awarded by the society, and forward the same to their respective claimants. He shall be ex officio Librarian; shall keep the seal and all the plates, dies, engravings, etc., belonging to the society,

and shall cause to be struck therefrom such medals and impressions as may from time to time be required.. He shall have charge of all specimens, models, plants, seeds, books, etc., and arrange, prepare or distribute the same, under the direction of the Board. He shall prepare all reports to be made by the Board to the society, and all reports to be made by the society to the State. He shall receive all moneys due or payable to the society and pay the same to the Treasurer, taking his receipt therefor; shall hold all bonds filed by officers of the society for the faithful performance of their duty, and all vouchers for every class of expenditure. He shall countersign all drafts ordered by the Board, and all certificates of annual and life membership, and keep an account of the same, in a separate book, as they are issued, and shall, in December of each year, prepare a tabular statement of the receipts and expenditures of the society, according to the law incorporating the same. For which services he shall receive such compensation as the Board shall decide to pay.

SEC. 4. *Duties of the Treasurer.*—The Treasurer shall receipt for all funds at the hands of the Secretary, and shall disburse the same only on the order of the Board, attested by the President and the Secretary. He shall also hold in trust all certificates of stock, bonds, notes, deeds, or other evidence of debt or possession, belonging to the society, and shall transfer, invest, or dispose of the same, only by direction of the society, or by a written order of the Board. He shall, within ten days after his election, file with the Secretary a bond for the faithful performance of his duties; said bond to be approved by the Board, and to be in a sum equal to twice the combined amounts of the funds on hand and the estimated revenue for the year, and shall, at the annual meeting, make to the society a detailed report of all his doings, for which services he shall receive such compensation as the Board shall, from time to time, decide to pay.

SEC. 5. *Duties of the Board.*—The Board of Managers shall have the general and financial management of all the affairs of the society in the interim of annual meetings. It shall fill all vacancies occurring between elections, and shall make the necessary preparations and arrangements for all meetings, fairs, exhibitions, etc. The Board shall also have power to make its own by-laws (not inconsistent with this Constitution) and arrange the time and place of its own meeting.

ARTICLE V.—STANDING COMMITTEES.

SECTION 1. *Committee of Finance.*—The Committee of Finance shall consist of three (the President and Secretary being two), whose duty it shall be to audit the Treasurer's account, to examine and approve all bills before they are paid, to have a general supervision of the finances of the society, and to report their doings in full to the Board, whenever called on so to do.

SEC. 2. *Library Committee.*—The Library Committee shall consist of three (the Secretary being one), whose duty it shall be to have the general supervision of the library and cabinet, to make all necessary rules and regulations for the government of the same (said rules and regulations being subject to the approval of the Board), to suggest such means for the safe keeping and enlargement of both the library and cabinet as they may deem expedient, and to make a full report of their doings, together with the state of the department under their charge, at each annual meeting.

SEC. 3. *Visiting Committee.*—The Visiting Committee shall consist of three, whose duty it shall be to visit and examine all farms, orchards, vineyards, nurseries, field crops, mining claims, ditches, mills, etc., which may be entered for competition, and which shall require examination at other times and places than the annual fair; to award premiums for the same, according to the schedule, and recommend such gratuities as they may deem proper, and make a full report to the Board at least one day previous to the annual meeting.

SEC. 4. *Committee of Publication.*—The Committee of Publication shall consist of three (the President and Secretary being two), whose duty it shall be to contract for and superintend, under the direction of the Board, all printing and publishing necessary for the prosperity of the society.

ARTICLE VI.—DONATIONS AND BEQUESTS.

SECTION 1. All donations, bequests and legacies to this society, designated by the donors for any particular purpose embraced within the objects of the society, shall be with strict fidelity so applied; and the name of each donor, together with the amount and description of such donation, and the object for which it was designated, shall be registered in a book, kept expressly for that purpose.

ARTICLE VII.—MEETINGS AND EXHIBITIONS.

SECTION 1. *Exhibitions.*—The society shall hold an annual fair and cattle show in the City of Sacramento, and may, at its discretion, hold such other exhibitions as it may deem conducive to the interests of agriculture.

SEC. 2. *Annual Meeting.*—The annual meeting shall be held at the Capital of the State, at such time, during the month of January in each year, as the Board may designate; at which time all the officers from whom reports of the preceding year's service are required shall present the same, and all officers for the ensuing year shall be elected by ballot; and all officers shall continue in office until their successors are duly qualified.

SEC. 3. *Special Meetings, how called.*—No special meeting of the society shall be called but upon thirty days notice in the columns of a newspaper published in each of the Cities of San Francisco, Sacramento, Marysville and Stockton; nor without a request signed by at least ten members.

SEC. 4. *Proxy Voting.*—It shall not be admissable for any member to vote by proxy in any meeting of this society, or its Board of Managers.

SEC. 5. *Quorum of the Society.*—At any meeting of this society, fifteen members (a majority of whom shall represent counties other than the one where the meeting shall be held) shall constitute a quorum.

ARTICLE VIII.—OFFICE AND ROOMS.

SECTION 1. The office, rooms, library and cabinet of the society shall be permanently located at the Capital of the State.

ARTICLE IX.—AMENDMENTS.

SECTION 1. Amendments to this Constitution must be presented in writing at an annual meeting, when, if unanimously agreed to, they shall be adopted; but if there be objection, and a majority consent thereto,

they shall be spread upon the minutes and lie over until the next annual meeting, when they shall be read, and if, after due discussion, two-thirds of all the members present vote for the amendments, they shall be adopted and become a part and parcel of this Constitution.

ARTICLE X.—EFFECT.

SECTION 1. This Constitution shall take effect from and after its passage.

—

I certify the foregoing to be a true copy of the Constitution of the California State Agricultural Society, as amended by unanimous consent at the annual meeting of the society, held on the twenty-sixth day of January, A. D. eighteen hundred and sixty-five.

ROBERT BECK, Secretary.

TRANSACTIONS

OF THE

STATE AGRICULTURAL SOCIETY

FOR THE YEAR 1868.

STATE BOARD OF AGRICULTURE FOR 1868.

PRESIDENT.

CHARLES F. REED.....Grafton, Yolo County.

DIRECTORS.

C. T. WHEELER.....Sacramento.
JOHN H. CARROLL.....Sacramento.
EDGAR MILLS.....Sacramento.
B. R. CROCKER.....Sacramento.
T. L. CHAMBERLAIN.....Placer.
WILLIAM P. COLEMAN.....Sacramento.
H. M. LARUE.....Sacramento.
H. R. COVEY.....San Francisco.
R. S. CAREY.....Yolo.

OFFICERS OF THE BOARD.

Secretary.....I. N. HOAG; P. O., Sacramento.
Treasurer.....R. T. BROWN, Sacramento.
Chemist and Metallurgist.....Dr. R. OXLAND, F. C. S., San Francisco.
Geologist.....Prof. WILLIAM P. BLAKE, San Francisco.
Meteorologist.....T. M. LOGAN, M. D., San Francisco.
Zoologist and Entomologist.....H. W. HARKNESS, M. D., Sacramento.
Botanists.....A. KELLOGG, M. D., San Francisco; Prof. H. N. BOLANDER, San Francisco.

SIXTEENTH ANNUAL MEETING.

SACRAMENTO, January 28th, 1869.

The regular annual meeting of the California State Agricultural Society took place this afternoon at the Pavilion, corner of Sixth and M streets.

The meeting was called to order at three o'clock by the President, Charles F. Reed, who stated the objects of the meeting to be the election of a President for the ensuing year, the supplying of the places of three members of the Board of Directors, whose terms of office had expired, the rendering of the annual reports, and the transaction of such other business as might come before the society.

On motion, the reading of the minutes of the last annual meeting was dispensed with.

The President announced that the first business in order was the reading of the annual report of the Board of Directors.

The Secretary, I. N. Hoag, then read the following report:

ANNUAL REPORT OF THE BOARD OF DIRECTORS.

To the Members of the California State Agricultural Society:

GENTLEMEN: It has been customary at our annual meetings for the Board, in addition to the report of the transactions of the society for the year, to enter at some length into a discussion of agricultural subjects generally. At this time we shall depart from this custom, and only in brief speak of matters relating more immediately to the interests of the society, leaving the more general subjects for discussion in our report required by law to be made biennially to the Legislature. We feel called upon, however, to congratulate the members of the society and the people of the State upon the fact which we all feel a pride in, that never before since the admission of our young State into the Union has California, as a State, or the Pacific coast as a whole, advanced so much in permanent and substantial prosperity as within the last twelve months. Agriculture, in all its departments, has been universally successful; and, as a consequence, all other industrial pursuits have been well sustained and have shared in a season of general prosperity and improve-

ment. How much the course of this society, through its officers, has had to do in bringing about this general improvement in the affairs of the industries of the State, we will leave the members of the society and the business men of the State to judge. We have felt the responsibility of the position we have held, and have endeavored to do our duty to the people and to the State. As in the conduct of all human affairs, time has been with us the great teacher, showing us frequently where errors have been committed in the past, and suggesting improvements for the future.

Since we have been charged with a part in the management of the affairs of the society, it has been struggling with pecuniary and other difficulties, which have to a great extent controlled the policy and directed the course of that management; and in judging of the administration of its affairs it must be remembered that we have always been under the necessity of doing what, under the circumstances, could be done, rather than what, under other circumstances, should have been done. When, in eighteen hundred and sixty-three and eighteen hundred and sixty-four, a majority of the present Board accepted the positions they now fill, it was difficult to find any one in the community who would accept of the position and undertake the performance of the thankless duties involved. Nothing but the very straightened circumstances of the society at that time, and the limited influence it was able to exert upon the industries of the State, induced the members of the Board to accept the positions which were then urged upon them, and they did so with the distinct understanding—among themselves, at least—that they would stand by each other, circumstances permitting, until the last obligation of the society was discharged, and until the society was able to exert that controlling influence over the industrial pursuits of the State that its original founders intended it should.

The first of these conditions would have been wholly fulfilled before the present meeting, but for the damage done to the buildings at the Park by the unusually high winds of last winter, rendering it necessary to expend a large amount of money for the repairs thus made requisite. By an analysis of the disbursements of the present year, it will be found that over three thousand dollars was laid out on these repairs, while the whole of the present indebtedness of the society is three thousand one hundred and thirty-four dollars. The receipts of the last fair were very large—amounting in all, for the year, to twenty-seven thousand one hundred and seven dollars and fifteen cents, while the expenditures were also very large, being, to date, twenty-seven thousand one hundred and seven dollars and fifteen cents, including four hundred and seventy-five dollars and thirty-three cents paid on the old indebtedness.

The last fair was continued ten days, but we would not recommend the continuance of this custom in the future. Such a custom would, in our opinion, not be for the interests of the society in a financial point of view, and, so long continued, the interest in the exhibition lags.

We would call the attention of the members to the provisions of the Constitution in reference to the privileges of members. As the Constitution now reads, any member has free access to all the exhibitions of the society, "accompanied by the ladies and children of his family." Under this provision, many well-meaning members think it no wrong to consider all his friends and their children members of his family for the purpose of going to the fair, and by this very liberal construction of this provision the society is deprived of a very great income each year, to which it is properly entitled. To obviate this difficulty we would recom-

mend a change in the Constitution, so that a member can only take in his wife and children under ten or twelve years of age.

Another matter connected with this subject is the practice of transferring of tickets by members to those who are not members. Those who have given this subject much attention have come to the conclusion that this practice prevails to a great extent, and that the receipts of the society are considerably less than they should be on this account.

It is difficult to meet this practice and prevent this imposition. The Constitution provides that for this offence the member guilty of it shall forfeit his membership; but the trouble lies in the difficulty of detecting the fraud. It is suggested that the membership tickets be printed on the face in large letters, "A transfer of this ticket forfeits membership;" and if this caution does not answer the purpose, it may become necessary to do away with membership tickets and substitute daily tickets instead, all of which shall be given up at the gate or door. Similar societies in the Atlantic States have been driven to the adoption of this latter plan for the same purpose.

In closing these brief remarks we congratulate the farmers of the State upon the excellent prospects of the year eighteen hundred and sixty-nine.

I. N. HOAG,
Secretary.

On motion, the report of the Directors was accepted.

It was moved that a Committee on Finance be appointed by the Chair, to consist of three members, to examine the accounts of the Secretary and Treasurer.

The motion was agreed to, and the President appointed C. H. Swift, L. A. Upson and N. A. H. Ball as such committee.

On motion, the reading of the financial report of the Secretary was dispensed with.

After considerable discussion, Section four, Article three, of the Constitution of the society, was amended, by striking out "the ladies and children of his family," and inserting "his wife and minor children." The section, as amended, reads as follows:

Any citizen of this State, being a member of this society, shall be eligible to office, entitled to vote, and enjoy the free use of the library, under the rules of the same, and have free admission, accompanied by his wife and minor children, to all the exhibitions of the society, and shall be permitted to compete for premiums in any or all departments

The President announced that the next business in order was the election of a President for the ensuing year.

Charles F. Reed, of Yolo, was nominated.

[J. H. McKune in the chair.]

It was moved and carried that the nominations be closed.

On motion, the Chair appointed as tellers, Leonard Goss, Henry Miller and George Rowland, who reported C. F. Reed unanimously re-elected President.

[President Reed in the chair.]

On again assuming the chair, the President returned his thanks to the members of the society for the appreciation shown of his efforts to fulfil the duties of his office, and guaranteed that his record in the future would be as good as in the past.

The President stated the next business to be the election of three Directors.

The following nominations were made:

C. T. Wheeler, Edgar Mills, Robert Hamilton, Robert Watt, J. H. Carroll and J. S. Woods.

The President appointed as tellers, Leonard Goss, Paul Morrill and George Rowland.

A ballot was then taken, as follows:

Whole number of votes cast	150
Necessary to a choice	76
Edgar Mills received	98
C. T. Wheeler received	81
Robert Hamilton received	62
J. H. Carroll received	58
Robert Watt received	45
J. S. Woods received	30
L. A. Upson received	1
—— Cox received	2

Edgar Mills and C. T. Wheeler were declared elected members of the Board of Directors.

The names of Carroll, Watt and Woods being withdrawn, on motion, the Secretary was instructed to cast the ballot for Robert Hamilton, who was accordingly declared unanimously elected.

The President and Board of Directors were authorized and instructed to examine the claims of several parties for premiums.

There being no further business before the society, on motion, at a quarter before five, the meeting adjourned *sine die.*

FINANCIAL REPORT

OF THE

STATE AGRICULTURAL SOCIETY

FOR

EIGHTEEN HUNDRED AND SIXTY-EIGHT.

Date.	On what account.	Amount.
1868.	CASH RECEIVED.	
January 4..	Cash for engine	$1,000 00
Jan. 7.....	Allen, for rent of Park	129 15
Jan. 27.....	For membership	370 00
Feb. 15....	Allen, for rent of Park	129 00
April 13	Borrowed of D. O. Mills & Co	1,000 00
"	Allen, rent of Park for March	129 25
April 14...	Allen, rent of Park for April	129 25
May 9.....	Allen, rent of Park for May	129 00
June 8.....	Allen, rent of Park for June	129 00
August 17..	Borrowed of D. O. Mills & Co	1,000 00
Sept. 4 ...	A. Bullard, for privilege at Park	610 00
Sept. 14 ...	Memberships sold	180 00
"	Memberships and rent	165 00
Sept. 15....	Receipts at Pavilion	1,197 50
"	Receipts at Park	1,509 00
"	Rent for room at Park	75 00
Sept. 16.....	Rent of Park for Sunday	200 00
"	Entrance fees to races	460 00
"	Tickets and membership at Park	1,099 00
"	Receipts at stairs	147 00
"	Collected at gate	31 00
"	Receipts at Pavilion	1,613 00
Sept. 18.....	Tickets and memberships at Park	935 00
"	Receipts at stairs	133 50
"	Entrance fees to races	210 00
"	Receipts at Pavilion	923 00
Sept. 19.....	Tickets and memberships at Park	787 00
"	Receipts at stairs	134 50
"	Entrance fees to races	180 00
"	Receipts at Pavilion	676 00
Sept. 20.....	Receipts at Pavilion	554 00
"	Tickets and memberships at Park	452 00
"	Memberships sold	100 00

Date.	On what account.	Amount.
Sept. 20.....	Receipts at stairs.....	$137 50
"	Received at gate at Park.....	179 50
"	Entrance fees at races.....	195 00
Sept. 21.....	Tickets and memberships at Park.....	698 50
"	Receipts at stairs.....	152 00
"	Entrance fees to races.....	285 00
"	Receipts at Pavilion.....	633 00
Sept. 22.....	Tickets at Park.....	554 50
"	Memberships.....	25 00
"	Receipts at gate.....	207 00
"	Receipts at stairs.....	226 50
"	Entrance fees to races.....	270 00
"	Tickets at Pavilion.....	586 50
"	Rent of soda fountain.....	136 50
Sept. 23.....	Tickets at Park.....	628 00
"	Receipts at stairs.....	155 75
"	Entrance fees to races.....	210 00
"	Tickets at Pavilion.....	464 50
Sept. 24.....	Tickets at Park.....	492 50
"	Entrance fees to races.....	365 00
"	Receipts at stairs.....	141 50
"	Tickets at Pavilion.....	384 00
Sept. 25.....	Tickets at Park.....	213 00
"	Gate at Park.....	95 50
"	Stairs at Park.....	110 00
"	Entrance fees.....	45 00
"	Tickets at Pavilion.....	236 00
Sept. 26.....	Rent of cider privilege.....	76 00
Oct. 2.....	Balance rent at Park.....	50 00
Oct. 9.....	Balance State appropriation.....	2,000 00
Oct. 10.....	Premium returned by Patterson.....	15 00
"	Rent of bar.....	75 00
"	Premium returned by Poorman.....	30 00
Dec. 29.....	Rent of Park for September, October, November and December.....	517 75
	Total.....	$27,107 15

Date.	On what account.	Amount.
1868.	CASH PAID TREASURER.	
Jan. 4.....	R. T. Brown, Treasurer.....	$1,000 00
Jan. 7.....	R. T. Brown, Treasurer.....	129 15
Jan. 27.....	R. T. Brown, Treasurer.....	370 00
Feb. 15.....	R. T. Brown, Treasurer.....	129 00
April 13....	R. T. Brown, Treasurer.....	1,000 00
"	R. T. Brown, Treasurer.....	129 25
April 14....	R. T. Brown, Treasurer.....	129 25
May 9.....	R. T. Brown, Treasurer.....	129 00
June 8.....	R. T. Brown, Treasurer.....	129 00
August 17..	R. T. Brown, Treasurer.....	1,000 00
Sept. 4....	R. T. Brown, Treasurer.....	610 00
Sept. 14....	R. T. Brown, Treasurer.....	180 00
"	R. T. Brown, Treasurer.....	165 00
Sept. 15....	R. T. Brown, Treasurer.....	1,197 50
"	R. T. Brown, Treasurer.....	1,509 00
"	R. T. Brown, Treasurer.....	75 00
Sept. 16...	R. T. Brown, Treasurer.....	3,550 00
Sept. 18...	R. T. Brown, Treasurer.....	2,201 50
Sept. 19...	R. T. Brown, Treasurer.....	1,777 50
Sept. 20...	R. T. Brown, Treasurer.....	1,618 00
Sept. 21...	R. T. Brown, Treasurer.....	1,768 50
Sept. 22...	R. T. Brown, Treasurer.....	2,006 00
Sept. 23...	R. T. Brown, Treasurer.....	1,458 25
Sept. 24...	R. T. Brown, Treasurer.....	1,383 00
Sept. 25...	R. T. Brown, Treasurer.....	699 50
Sept. 26...	R. T. Brown, Treasurer.....	76 00
Oct. 2.....	R. T. Brown, Treasurer.....	50 00
Oct. 9.....	R. T. Brown, Treasurer.....	2,000 00
Oct. 10.....	R. T. Brown, Treasurer.....	120 00
Dec. 29.....	R. T. Brown, Treasurer.....	517 75
	Total	$27,107 15

Date.	On what account.	Amount.
1868.	DISBURSEMENTS.	
Jan. 25....	Paid I. N. Hoag, expenditures	$26 50
Jan. 31.....	Edwards & Co., stationery	21 51
Feb. 8.....	Wells, Fargo & Co., freight	24 00
"	C. A. Stevens, services	25 00
Feb. 15.....	H. S. Crocker, printing	5 88
"	R. E. Draper, Directory	3 10
"	Turton & Knox, sand	6 00
"	D. Woods, labor	10 00
"	I. N. Hoag, salary	300 00
"	I. N. Hoag, expenditures	15 00
"	J. H. Pierce, filling diploma	7 50
Feb. 17.....	John Shellers, carpenter	70 00
Feb. 20.....	John Shellers, carpenter	40 50
March 8.....	Friend & Terry, lumber	400 00
"	John Shellers, carpenter	24 00
"	C. L. Knowles	10 00
March 7...	J. N. Andrews, lettering	21 95
March 17...	S. S. Carlisle, brick work	7 00
March 7...	McManus & Johnson, roofing	400 00
March 9...	John Adams, posting bills	5 00
March 19...	J. H. Pierce, lettering	6 75
March 20...	McManus & Johnson, roofing	150 00
"	I. N. Hoag, on salary for March	129 25
March 21...	Mr. Wilson, labor on stalls	8 00
April 13...	McManus & Johnson, roofing	102 60
"	A. P. Smith, transplanting trees	33 75
"	E. Conway, trimming trees	11 25
"	I. N. Hoag, salary April, balance March	170 75
"	F. J. Moore, hardware	53 68
"	Friend & Terry, lumber	202 11
"	N. L. Drew, lumber	119 43
"	C. H. Krebs, painting	162 75
"	Huntington & Hopkins, nails	9 25
"	T. J. McKim, cleaning boiler	8 00
May 29.....	I. N. Hoag, salary for May and June	300 00
"	H. Wachhorst, silverware	19 00
June 5.....	J. Merkley, premiums	40 00
June 28.....	I. N. Hoag, salary July	150 00
"	J. T. Roberts, labor	5 00
"	A. Fleck, repairing flag	2 50
August 3..	W. T. Crowell, Post-office stamps	10 00
August 10..	James Anthony & Co., advertising	5 00
August 26..	Benjamin Bullard, Jr., Post-office stamps	15 00
Sept. 2.....	M. R. Rose, work on pump	163 00
Sept. 7.....	J. H. Coffey, work on tank	164 00
Sept. 8.....	R. B. Gray & Co., gold medals	403 75
Sept. 19.....	W. T. Crowell, services	53 00
"	Chase & Boruck, advertising	60 00
"	L. J. Stevens, work on engine	22 50

Date.	On what account.	Amount.
Sept. 19.....	T. Rine, labor.....	$15 00
"	J. Mela, labor as police.....	12 00
"	J. Newman, premium.....	100 00
Sept. 25.....	Purses for fifteenth instant.....	450 00
"	Purses for sixteenth instant.....	700 00
"	Purses for seventeenth instant.....	600 00
"	Purses for eighteenth instant.....	700 00
"	Purses for nineteenth instant.....	600 00
"	Purses for twenty-first instant.....	650 00
"	Purses for twenty-second instant.....	700 00
"	Purses for twenty-third instant.....	800 00
"	Purses for twenty-fourth instant.....	700 00
"	Purses for twenty-fifth instant.....	850 00
	PREMIUMS PAID AT STOCK GROUNDS, BY WARRANT NUMBER SIXTY-ONE.	
Sept. 25....	Paid E. Jacobs.....	50 00
"	Thomas Edwards.....	40 00
"	John Hall.....	90 00
"	L. P. Marshall.....	30 00
"	John Hall.....	13 00
"	Theodore Winters.....	25 00
"	John Hall.....	20 00
"	R. T. Leet.....	15 00
"	J. G. McCracken.....	40 00
"	S. Treat.....	30 00
"	J. L. Clark.....	20 00
"	A. B. Burns.....	15 00
"	C. H. Shears.....	40 00
"	W. M. Allen.....	30 00
"	John Brewster.....	20 00
"	S. Treat.....	15 00
"	J. G. McCracken.....	10 00
"	C. B. Hoffman.....	40 00
"	D. France.....	30 00
"	C. B. Hoffman.....	15 00
"	Thomas Edwards.....	55 00
"	C. B. Hoffman.....	10 00
"	A. J. Rhoads.....	40 00
"	J. Zumwalt.....	30 00
"	D. Flint.....	20 00
"	J. W. Thompson (Poorman).....	30 00
"	A. Guerrero.....	30 00
"	A. F. Smith.....	20 00
"	A. Newbauer.....	15 00
"	J. C. Morrison, Jr.....	40 00
"	E. M. Skaggs.....	40 00
"	R. S. Carey.....	15 00
"	A. J. Rhoads.....	30 00
"	W. A. Boggs.....	20 00

Date.	On what account.	Amount.
Sept. 25.....	C. Gosling.....	$20 00
"	L. A. Upson.....	15 00
"	C. Gosling.....	50 00
"	H. Wilsey.....	30 00
"	J. R. Northrop.....	15 00
"	R. S. Carey.....	20 00
"	William Baudeen.....	15 00
"	W. B. Gibson.....	10 00
"	D. Flint.....	40 00
"	J. G. McCracken.....	75 00
"	Whipple and Teakle.....	100 00
"	R. T. Leet.....	75 00
"	John Hall.....	50 00
"	G. N. Swezy.....	40 00
"	G. N. Swezy.....	55 00
"	C. Luer.....	10 00
"	G. N. Swezy.....	30 00
"	M. Wick.....	10 00
"	P. Burnes.....	15 00
"	G. N. Swezy.....	10 00
"	A. W. Butler.....	30 00
"	G. N. Swezy.....	20 00
"	P. Burnes.....	15 00
"	G. N. Swezy.....	10 00
"	G. N. Swezy.....	50 00
"	G. N. Swezy.....	40 00
"	Seneca Daniels.....	40 00
"	Seneca Daniels.....	20 00
"	Seneca Daniels.....	20 00
"	Seneca Daniels.....	170 00
"	William Schaub.....	10 00
"	S. Poorman (Thompson).....	30 00
"	R. T. Leet.....	40 00
"	Landrum, Butterfield & Co.....	20 00
"	T. McConnell.....	15 00
"	Thomas Cotter.....	35 00
"	Landrum, Butterfield & Co.....	25 00
"	Landrum, Butterfield & Co.....	20 00
"	E. Holland.....	15 00
"	E. Holland.....	15 00
"	Landrum, Butterfield & Co.....	15 00
"	James Robinson.....	15 00
"	P. Burnes.....	15 00
"	James Robinson.....	30 00
"	Peter Burnes.....	5 00
"	A. Duvol.....	5 00
"	P. Burnes.....	5 00
"	P. Burnes.....	5 00
"	Premiums at Hall, Warrant No. 62.....	68 00
Sept. 28....	D. L. Perkins, premium.....	22 00
"	Coffin & Standish, premium.....	300 00

Date.	On what account.	Amount.
Sept. 28.....	J. Henmann, premium	$96 00
"	Thomas Winship, service	72 00
"	L. Provost, premium	25 00
"	M. W. Willis, music	800 00
"	H. T. Buckley, premium	50 00
"	J. D. Patterson, premium	215 00
Sept. 30....	John Shellers, labor	30 00
"	Frank Hamilton, labor	12 00
"	Joseph Dunkerly, labor	12 50
"	Charles C. Brown, labor	57 00
"	Edwards & Co., stationery	50 00
"	C. A. Stevens, Entry Clerk	52 00
"	G. Angells	6 50
"	G. P. Warner, Ticket Clerk	50 00
"	H. B. Warner, Assistant Ticket Clerk	30 00
"	E. K. Warner, Assistant Ticket Clerk	30 00
"	J. S. Barnes, police	40 00
"	A. S. Taylor, stairkeeper	42 00
"	J. S. McClary, services	26 00
"	Thos. Coleman, services	32 00
"	W. McCracken, services	30 00
"	J. T. Roberts, doorkeeper	25 50
"	Thomas O'Brian, labor	40 00
"	Robert Miller, watering cart	100 00
"	Samuel Deal, gatekeeper	44 00
"	International Hotel, board	30 00
"	J. Nickerson, police	39 00
"	C. L. Denin, labor	5 00
"	Charlotte Johnson, chambermaid	25 00
"	R. L. Bampton, stairkeeper	40 00
"	Isaac Galloway, labor	28 00
"	Griffitts & Co., merchandise	4 25
"	H. S. Beals, stairkeeper	40 00
"	M. Hala, labor	24 00
"	Fitzsimmons & Gleason, work	236 50
"	C. C. Barnes, labor	30 00
"	*State Capital Reporter*, advertising	51 50
"	H. Alvord, watchman	33 00
"	S. D. Smith, wood	9 00
"	A. C. Bidwell, wood	101 00
"	J. W. Taylor, gatekeeper	40 00
"	Robert McCarthy, doorkeeper	33 00
"	M. Gottshall, labor	58 50
"	Thomas Byrne, labor	76 50
"	Hiram Clock, labor	69 00
"	J. E. Smith, ticket clerk	50 00
"	Ed. Woods, carpenter	100 00
"	G. W. Whitlock, superintendent	58 50
"	E. & H. Astbury, wood	10 00
"	*Daily Bee*, advertising	15 50
"	T. C. May, drayage	78 25

Date.	On what account.	Amount.
Sept. 30.....	J. Allen, on hay account	$359 00
"	Mrs. G. D. Stewart, premium	20 00
"	Jos. Dunkerly, premium	15 00
"	A. Music, premium	45 00
"	E. Coggshall, premium	30 00
"	Marshall & McGowan, premium	35 00
"	R. H. Babbitt, police	21 00
October 2..	G. O. Perry, premium	3 00
"	I. S. Bamber, premium	8 00
"	J. C. Devine, premium	30 00
"	E. S. Aiken, premium	25 00
"	E. F. Aiken, premium	4 00
"	I. L. Merrill, premium	4 00
"	P. H. Murphy, premium	15 00
"	Thomas Thoman, premium	28 00
"	B. Dennery, use of dishes	19 75
"	L. C. Allen, straw	132 15
"	I. Allen, balance hay	253 14
"	Robert E. Draper, entry clerk	48 00
"	H. S. Crocker & Co., printing	233 74
"	State printing office, printing	175 00
"	S. A. Deuel, assistant ticket clerk	10 50
"	Deuel, Griffiths & Co., merchandise	18 63
"	Benjamin Reed, assistant engineer	56 00
"	J. Ward, stairkeeper	38 00
"	Benjamin Stewart, exit gatekeeper	30 00
"	O. W. Wallace, carpenter	14 00
"	Dale & Co., merchandise	5 75
"	M. Quinn, labor	50 50
"	A. M. Dennin, watchman	25 00
"	E. B. Ryan, entry clerk	50 00
"	G. W. Martin, hay	33 75
"	R. S. Carey, expenditures	155 00
"	Sacramento Gas Company, gas	400 00
October 7..	D. O. Mills & Co., interest	75 00
"	E. F. Patton, assistant ticket clerk	15 00
"	F. J. Moore, hardware	42 00
"	Friend & Terry, lumber	172 00
"	L. H. Gould	1 00
"	Hiram Clock, labor	26 00
"	George H. Baker, diplomas	95 50
"	William Mace, doorkeeper	40 00
"	S. Tryon, hay	20 80
"	Thomas Byrne	18 00
"	J. W. Avery, lumber	173 62
"	C. L. Knowles, carpenter	40 00
"	Hotchkiss & Co., sawdust	15 00
"	Lillie Hamilton, premium	3 00
"	C W. Hoit, premium	3 00
"	Mrs. W. E. Brown, premium	10 00
"	D. R. Hunt, premium	10 00

Date.	On what account.	Amount.
October 7..	Robert Williamson, premium	$17 00
"	L. K. Hammer, premium	40 00
"	Kohler & Chase, premium	15 00
"	C. A. Barnes, premium	15 00
"	J S. Harbison, premium	3 00
"	J. S. Harbison, premium	5 00
"	S. W. Blackwood, premium	2 00
"	B. N. Bugbey, premium	70 00
"	C. W. Reed, premium	15 00
October 10	D. Kendall, premium	6 00
"	Mrs. M. H. Herbert, premium	3 00
"	M. & A. Wilcox, premium	10 00
"	E. Walton, premium	3 00
"	C. A. Fargo, premium	10 00
"	T. Milgate, premium	2 00
"	J. W. Neff, premium	1 00
"	A. Dennery, tumblers	2 00
"	Whittier, Fuller & Co., work	78 12
"	B. R. Sweetland, merchandise	10 87
"	J. McGuire, blacksmith	6 00
"	A. Hamburger, merchandise	18 63
"	George Schmeiser, machine work	502 13
"	James Anthony, advertising	71 00
"	M. and A. Wilcox, pumping	62 83
"	M. Gottschall, labor	18 00
"	*Daily Record*, advertising	4 50
"	W. V. Frazier, drayage	7 25
"	J. M. Calvin, sign painting	4 00
"	Gillig, Mott & Co., merchandise	3 00
"	Huntington & Hopkins, merchandise	16 47
"	J. Isaacs, police	30 00
"	F. S. Malone, horse and buggy	60 00
"	W. H. Hoit, tinning	3 50
"	Mr. Harvey, police	2 00
"	J. Gillman, drayage	1 50
"	Ben. R. Crocker, expense	94 75
October 17	Mrs. J. P. Odbert, premium	15 00
"	J. H. Pierce, filling diplomas	5 75
"	D. W. Clark, gas fitting	251 48
"	Lipman & Co., merchandise	23 25
"	G. W. Whitlock, labor	23 00
"	F. Blackleach, merchandise	7 00
"	Casey & Crozier, casks	22 00
"	H. M. Bernard, wrench	3 00
"	I. N. Hoag, salary, August and September	300 00
"	M. O'Mara, labor	12 00
October 19	Stockton *Independent*, advertising	25 00
"	Marysville *Appeal*	20 00
"	*Evening Bulletin*	52 50

Date.	On what account.	Amount.
October 19	*Examiner*	$32 50
"	J. C. Moore, posting bills	4 00
"	W. King, posting bills	5 00
"	Benjamin Wilson, posting bills	3 00
"	W. L. Sullivan, posting bills	3 00
"	C. B. Kenard, labor	16 00
"	J. H. Pierce, filling diplomas	3 00
"	Benjamin Bullard, Jr., Assistant Secretary	153 00
"	Casebolt & Kern, premium	25 00
October 24	L. Powers & Co., casks	16 00
October 29	I. N. Hoag, salary for October	150 00
"	P. Mezzara, premium	10 00
October 30	A. L. Greenlow, premium	15 00
October 31	W. P. Michener	88 50
"	T. H. Cook, wood	8 50
"	Lottie Hoffman, premium	3 00
"	W. W. Marvin, premium	6 00
"	Daniel Flint, premium	3 00
"	William Caswell, bill posting	15 00
"	F. Herser, labor	20 00
"	Mrs. H. Adams, premiums	8 00
"	John C. Carroll, grain	23 15
"	Mrs. J. Bassford, premium	2 00
"	L. Prevost, premium	25 00
"	Mission Woollen Mill, premium	86 00
"	Oakland Cotton Mill, premium	50 00
"	R. C. Terry & Co, premium	13 00
"	Gillig, Mott & Co., premium	5 00
"	Goodwin & Co., premium	5 00
"	N. P. Cole & Co., premium	41 00
"	Lansberger, premium	20 00
"	P. Schaube, premium	20 00
"	J. R. Snyder, premium	10 00
"	Craig, premium	10 00
"	Eberhardt & Co., premium	40 00
"	Otto Schrader, premium	10 00
"	William Shew, premium	65 00
"	P. J. Devine, premium	10 00
"	Sacramento Gas Co., gas	10 80
"	F. M. Chapman, horse hire	250 00
"	J. Slaughter, labor	50 00
Nov. 21	I. N. Hoag, salary for November	150 00
"	A. Burgman, premium	14 00
"	C. H. Krebs, glazing	25 00
"	T. J. McKim, pulleys, etc	39 50
"	A. Hooper, bill posting	5 00
Dec. 5	George W. Chesley, cash	6 00
"	Locke & Lavenson, upholstery	128 40
"	Sacramento Gas Co., gas	8 80
"	H. T. Holmes & Co., lime	2 25
"	Thomas Cotter, premium	15 00

Date.	On what account.	Amount.
Dec. 5	D. Elemdorf, bill posting	$5 00
Dec. 12	I. N. Hoag, salary for December	150 00
"	C. Heinrich, premium	15 00
Dec. 16	I. N. Hoag, expenditures	26 00
Dec. 17	Charles F. Reed, expenditures	1,000 00
Dec. 29	N. L. Drew, lumber	432 54
"	Robert Allen's bill	517 75
1869.		
Jan. 23	W. P. Coleman, legal tenders	7 20
"	Goss & Lambard, removing machinery	50 00
"	A. Steiner, filling diplomas	90 75
"	D. McCarthy, labor	15 00
"	R. L. Robertson, premium	6 00
"	M R. Rose, repairing wells, etc	87 00
"	E. Burden, labor	15 00
"	I N. Hoag, expenditures as per bills	244 23
"	I. N. Hoag, salary for January, 1869	150 00
"	John G. Allmond, labor	20 00
"	J. Bithell, stationery	3 00
"	Sacramento Gas Co., gas	3 20
Jan. 28	R. T. Brown, balance of account of 1867	8 24
"	N. Greene Curtis, on old indebtedness	475 33
	Total	$27,107 15

FIRST MEETING OF THE NEW BOARD OF AGRICULTURE.

SACRAMENTO, January 28th, 1869.

The Board met at the call of the President, at the office of W. T. Coleman, at seven o'clock P. M. There were present C. F. Reed, President, and Directors Covey, Carey, Larue, Wheeler, Hamilton and Coleman.

I. N. Hoag handed to the President the following communication:

SACRAMENTO, January 28th, 1869.

To the State Board of Agriculture:

GENTLEMEN: I hereby tender my resignation as Secretary of your Board, and decline being a candidate for re-election. The reason of this step on my part is that my private business will not permit my giving the time required for the performance of the duties of the office.

I. N. HOAG.

On motion, his resignation was accepted.

There was a bill of the *Bee*, and one of H. Wachhorst and others, referred to Mr. Larue and the Secretary, and the Secretary was instructed to pay N. Greene Curtis the sum of five hundred dollars as soon as there were sufficient funds on hand.

The time of holding the next annual fair was fixed for the thirteenth of September, and to continue six days.

On motion of Mr. Carey, the Board proceeded to the election of Secretary.

Mr. Hamilton nominated Robert Beck, and on ballot he was elected, and his election made unanimous.

R. T. Brown was unanimously re-elected Treasurer.

The President and Mr. Covey were elected a Committee on Speed Programme.

Messrs. Larue, Hamilton, Covey and Coleman were appointed a committee to revise the premium list.

Messrs. Carey and Wheeler were appointed a committee to confer with the lessee of the Park in reference to certain stables.

Standing committees were appointed as follows:

Finance—Mills, President and Secretary.
Library—Secretary, Ross and Coleman.
Visiting—Larue, Hamilton, Carey and Covey.
Publication—Secretary, President and Wheeler.

The following resolution was unanimously adopted:

Resolved, That the thanks of this Board be tendered the late Secretary, I. N. Hoag, for the able manner in which he has performed the arduous duties of his office for the past six years.

The Board then adjourned *sine die*.

OPENING ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER SEVENTEENTH, EIGHTEEN HUNDRED AND SIXTY-EIGHT.

By CHAS. T. REED, President.

Ladies and Gentlemen, Members of the State Agricultural Society:

I hoped and confidently expected, when I had the honor to address you, one year ago, from this same stand, and on an occasion similar to the present, that some other and more competent person would have occupied my position here to-night; but your will, and not mine, has been done; and it becomes my pleasant duty once more to salute you with words of sincere gratification and thankfulness for our State's prosperity in the past, and of cheerful hope and abiding faith in her continued and increased prosperity in the future.

Since California became one of the members of the great republic—now about eighteen years ago—there never has been a period in which all our material industries have been so universally and substantially prosperous as the present year. Go where you will—among the sturdy yeomanry of our broad plains or fertile valleys, among the hardy miners, high up on the snow-capped Sierra Nevadas, or deep down in the cragged gulches, overhung by those lofty peaks, or, even deeper, in the almost bottomless mining shafts. Go among the toiling mechanics and skilful and painstaking artizans of our towns and cities. Go among each and every class of people in the entire State, and you will find all busily and profitably engaged; all contented and happy over present individual and collective successes; all buoyant and jubilant with the bright and cheering prospects in the immediate future.

Our farmers are not only doing well, and laying up a competency for themselves and families, but they are absolutely becoming rich. An abundance of crops and highly remunerative prices are filling their coffers with gold and silver, enabling them to improve and beautify their farms and homes, to build new and commodious dwellings and barns, to purchase and use the most approved labor-saving machinery in the cultivation of their land and the gathering and saving of their crops; to supply their families with all the necessaries and luxuries enjoyed by older but less favored communities.

As prospers agriculture, the great fountain of all wealth, the great mother of all other occupations and promoter of all civilization, so prospers the towns and cities, the State and the entire people.

As a matter of State pride, it may be stated that the estimated product of three of our leading industries, for the present year, is twenty million

bushels of wheat, twelve million gallons of wine, and ten million pounds of wool. Other agricultural industries have all been equally favorable.

This is not a bad showing for a State which, but ten years since, was considered of no value but for the gold that could be dug from our mines. In consequence of this great prosperity of agriculture, and the consequent and corresponding prosperity of all other industries, an unusual and unprecedented impetus has been given to works of public improvement, and we find ourselves in the midst of an era of universal activity; every class in the community seems to have become impressed with the necessity of greater facilities for travel from point to point, in the State, and for the transportation of the products of the land from place to place, and from the points of production to the seaboard, from which they may find the markets of the world. New steamboat routes are being opened up and old ones improved and supplied with a better class of steamers. New railroad routes are projected to-day; and to-morrow, or almost before the communities through which the roads are to pass have heard of said project, the iron horse speeds through the country, announcing the completion of the work.

The great question of handling grain, whether in bulk or in sacks, which has interested all classes of the community, and especially the farmers, for years past, is now being taken hold of by a company of enterprising capitalists, and the present prospect indicates that the day is not far distant when this great drawback upon the profits of grain raising will be fully removed, and that our immense grain crops will be handled with the same facility, and with equal economy, as in the Atlantic States. The great crops of the West, and the necessity for economy in the mode of handling and sending them to market, has caused the introduction of a system of elevating the grain from steamers and freighting vessels, from cars and other means of conveyance, into warehouses and mills, by means of machinery run by steam, thus saving to the farmer a much better profit on the production than could be saved to him by the modes of handling formerly practiced there, and still practiced here. When we shall have introduced these facilities here, and brought them into general use, a very large per cent. of the profits of the crops, which now go to the middle men or jobbers, will be retained in the hands of the farmer, and will be laid out in the general improvements of the country.

Every year adds some new and important labor-saving machine to the list of agricultural implements and machinery. The present year is likely to be marked by an innovation, the importance of which to the prosperity of the country can be but little less than the invention of the steam engine, or the application of steam to the propelling of vessels or railroad cars. I refer to the invention of the steam plow. The subject of applying steam to the tilling of the soil has attracted the attention of inventors in nearly all civilized countries for years past; but a citizen of California is likely to be the first to succeed in the accomplishment of this grand achievement.

We have two competitors for the high honor of inventing and putting into practical use a travelling steam plow. One, it is true, has as yet only built a model, but the principle upon which it is constructed, and the simplicity of the application of the principle to the end required, gives good judges a high degree of confidence in its final success. The other has built a powerful working machine, said to be capable of plowing, sowing and planting from forty to fifty acres of grain per day. This latter machine was tried, to the entire satisfaction of many skilful mechanics and practical farmers, at the late fair of the Mechanics' Insti-

tute, at San Francisco, and I am happy to be able to announce that it has to-day arrived in this city, and will be put to a practical test on the stock grounds, during the present fair.

Coming here, fellow farmers, as we are wont to do each year, and laying the products of our farms, our vineyards, our orchards, our silk plantations, our dairies and flocks upon the altar of improvement, and justly feeling a pride in view of our achievements, let us not forget, first, that we are indebted for all these blessings to an over-ruling Providence, who shapes and guides the destinies of nations and of individuals with the same certainty and by the same unerring laws of cause and effect as He brings day to succeed night and season to succeed season.

Let us remember that our State is comparatively new—that the soil we cultivate is virgin soil, which has laid untouched by man for thousands of years, accumulating, little by little, the very qualities for which we prize it—the very elements which renders it so productive. Let us remember that every crop we take from this land, every grain of wheat, barley, oats or corn we gather from our fields, takes away a certain quantity of their productive qualities—these elements of growth—and that unless we return an equal quantity of these elements, our land must inevitably deteriorate and finally become poor and unproductive.

Let us then learn wisdom in the days of our youth. Let us take lessons from the experience of our fathers. Let us shun the shoals upon which the ships bearing the rich first product of many a young State have been stranded. In the plain language of a farmer, let us give our soil manure and time to recuperate and keep it rich, as we give our farm horses grain and rest to invigorate and keep them fat. It has been well and truly said, that "he who makes a blade of grass grow where nothing grew before, is a benefactor of mankind." It may with equal truth be said that he who wantonly and uselessly destroys the productive qualities of the soil which he, for the time being, is permitted to occupy, thus decreasing by thousands and tens of thousands the blades of grass, or grains or bushels of wheat which that soil is capable of growing, is a malefactor of mankind. He thus heedlessly destroys the capability of the earth for sustaining the lives of his own children and of generations in the future. The practice which has been in years past so much in vogue in this State, of burning the straw and stubble of our grain crops, cannot be too emphatically condemned. The only true system, to secure continued success, is that of summer fallowing and early sowing. This system gives the soil the necessary rest, and has the advantage of much greater economy in the cultivation. We refrain from following this subject further in the brief time allowable to an opening address. The able gentleman who is to deliver the annual address will doubtless discuss the various subjects connected with our agricultural resources and practices more in detail than it would be proper for me to do—and with more ability than I pretend to possess.

The most that I desire to do is to call attention to the leading evidences of our prosperity as a commonwealth. To do this we need not go beyond the exhibition which we have met here to-night to inaugurate. We have here striking evidences of this prosperity spread out before us. We see here a bird's-eye view of all the industries of the State. None but a prosperous people could make an exhibition like the one we here behold—none but a highly enlightened and intelligent people can appreciate the benefits or enjoy the advantages of such an exhibition. We see before us many evidences of high invention and mechanical genius. We discover the unerring proofs of most perfect operative skill—the

rough and raw materials directly from our mines and farms, the powerful machinery and useful inventions of our mechanics, the beautiful and useful fabrics of our manufactures, the rich, delicate, as well as magnificent works of art, are all here, arranged with so much skill and taste as to form a complete and perfect whole. Indeed, the grand display before us is in itself a most magnificent picture, the conception and execution of which gives evidence of a high order of artistic skill. We might dwell with pleasure and profit upon the special merits of individual exhibitions, but each and every exhibitor is entitled to so much credit that it would be invidious to discriminate.

There is one feature in this exhibition so particularly striking and so commendable to all the exhibitors, that I cannot refrain from speaking of it in terms of high praise and especial approval. I refer to the spirit of kindness and accommodation so manifest on every hand. However high the rivalry of different exhibitors in the same department may seem, I am satisfied that the same spirit which now obtains will be manifested to the close of the fair, and if so, the exhibition must be attended with beneficial results.

Improvement is the great object of all these industrial exhibitions. To accomplish the greatest good, with the means afforded them, has been and is the aim of the officers and managers of this society. To do even-handed justice between each and every exhibitor is the most ardent wish of every member and officer of the Board; and I now assure you that they will do all they can on their part to conduct the fair to a termination which shall be as satisfactory as its beginning is auspicious; and I know I need not call on those I now address to second their efforts in this respect. Thanking you, each and all, for the exhibitions you have been pleased to make, and particularly for the kind attention with which you have listened to the few remarks I have felt called upon to offer, I will bid you all a cordial good night.

ANNUAL ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER TWENTY-FIRST, EIGHTEEN HUNDRED AND SIXTY-EIGHT.

By JUDGE J. B. CROCKETT.

Mr. President, Ladies and Gentlemen:

We of California are a "fast" people—not only in the slang sense of that term, but in its literal acceptation. When we speak of a "fast" young lady, we mean one who is not over modest; who delights in a flashy style of dress; who drives tandem or four-in-hand with the skill of a Jehu; who talks loudly at the opera, and is always doing things on the very verge of impropriety. When we refer to a "fast" young man, we mean one who sports the most delicate kids and the most impracticable necktie; who drinks none but the best brandy, and a good deal of it; who keeps a fancy team and several thoroughbred setter dogs; and who, when scarce of cash, either sponges on his friends or patronizes "free lunches."

It is not to be denied that we of California, as a people, are somewhat "fast" in this slang sense. We not only like to create a sensation, both at home and abroad, but we sometimes accomplish that result by methods of very questionable propriety. We delight to show the world that we can perform achievements at which older communities would stand aghast. Whatever is difficult of accomplishment has to us a peculiar fascination; and if other people deem it impracticable, that is a conclusive argument why we should immediately set about doing it. We are, emphatically, a people of extremes, and are not content to follow precedents simply because they are old. When we turn our attention to horse racing, nothing but the most thoroughbred and high priced stock will answer our purposes. Hence we import, at fabulous prices, Norfolk and Lodi, two of the fleetest racers in the world, and who compose the fancy team of that "fast" young blood, the public of California. In former days, when the continental railway was only beginning to dawn on our hopes as a bright vision of the future, we established a "Pony Express" across the Plains, which made the fastest "pony" time on record. I shall never forget the intense thrill of excitement which pervaded the busy crowds on Montgomery street, as the first pony, with his hatless rider, came dashing at full speed up the street, with dates from St. Louis less than fifteen days old. But the "Pony Express" was not enough for us. We needed a daily mail-coach line across the continent; so, one bright afternoon, we heard the coachman's horn sounding its most enlivening notes at the south end of Montgomery street, and,

immediately after, the first Overland coach, drawn by a spanking team, rattled past, with a mail from St. Louis less than twenty days old.

But the Overland Mail coach and the "Pony Express" have become obsolete institutions. They were too slow for so "fast" a people, and have dwindled into utter insignificance in comparison with our marvellous achievements in building railroads. We have not only invented a machine which will lay five or six miles of track per day, but have scaled the lofty summit of the Sierra with an engineering skill which has no parallel, and the beautiful echoes of Donner Lake and Tahoe, those gems of our mountain scenery, are now awakened by the bell of the locomotive and the whistle of the steam engine, whilst the great railway is being pushed across the sandy plains beyond with a celerity which almost outstrips the fancy. Thus it is in all things, we are a "fast" people. If we set about the building of a fine hotel, we decorate it more elaborately and furnish it more splendidly than any other hotel, as the magnificent structures of that class in San Francisco bear witness. The dining-room of the Lick House is said to be finest dining saloon in any public house in the world. Soo, too, in many of our private dwellings, all that art can contribute to luxury or comfort is invoked by this "fast" people.

In like manner, when our proclivities run in more vicious channels, they are equally indicative of our contempt for old precedents and of our rapid advance in the alluring paths of vice. If a man makes up his mind to become a gambler, he gambles on a grand scale; if a thief, he will steal every thing, from a pocket handkerchief to a grand piano; if a robber, he will garrote you for a quarter of a dollar, or rob an express messenger of fifty thousand dollars in bullion; if a swindler, he will cheat you out of anything, from a penny whistle to a gold mine; if a fraudulent bankrupt, he will fail for a million and pay his creditors five cents on the dollar.

Are we not, then, emphatically a "fast" people? Do we not, in some respects, bear a striking resemblance to the "fast" young lady who wears very low-neck dresses and very high heeled boots; who is particularly fond of champagne and terrapin stews, dresses in a "stunning" style, and is only deterred from smoking cigars because it might affect her breath; or to the fancy young man, with the irreproachable kids, whose chief occupation is to cultivate his moustache, drive a spanking team, and give expensive oyster suppers, to be paid for with money borrowed from his friends?

But if we are a "fast" people in the slang sense, it is not to be denied that we are also a fast people in the more literal and comprehensive meaning of the term. It was but eighteen years, on the ninth day of this present month, since California was admitted into the Union; and it is only about twenty years since Marshall found the first gold, in the American River, near the old saw mill. Has history, either ancient or modern, recorded any such progress as ours, in so brief a period? A becoming modesty, perhaps, should prompt us to leave to others the task of recording our achievements; but inasmuch as excessive modesty is not an American, and particularly a California virtue, I propose to trace briefly this wonderful progress back to its source, that we may thereby be enabled the more clearly to foresee the future.

It is, perhaps, but a natural feeling of gratified vanity which generally prompts us to take to ourselves more credit than we deserve for results which we have aided to achieve. In reviewing the brief but wonderful career of our favored State, we are but too prone to imagine that the

marvellous results which have been achieved are attributable less to natural causes than to our superior intelligence, indomitable energy and profound sagacity. To these I attribute a liberal share, but by no means the greater proportion of the immense progress which California has made, not only in material wealth, but in all the high walks of civilization.

The true secret of our rapid growth in all that constitutes the real greatness and grandeur of a State, lies chiefly in the fact that nature has furnished us with a genial climate of unparalleled salubrity; with a soil of unexampled fertility, diversified with beautiful plains, enchanting valleys, undulating hills and rugged mountains—the whole being washed on one side by the Pacific Ocean, with its healthful breezes, and intersected by navigable streams from the mountains to the sea. When we remember that these beautiful plains and valleys not only rival the delta of the Nile in their wonderful fertility, but far excel it in the variety of their products and in the salubrity of the climate, and that these rugged mountains are not only covered with gigantic forests of valuable timber, but contain within their rocky caverns hidden treasures which have long since put to an open shame the story of Aladdin and his lamp, it requires no profound political economist to disclose by subtle reasoning the real secret of our unexampled progress as a people. Where nature has been so prodigal in her gifts, tempting the husbandman with such generous returns for his labor, stimulating the enterprise of the miner with such enormous stores of hidden wealth, and infusing new energy into the merchant by spreading out before him the Pacific Ocean, with its sunny islands and its distant shores courting our growing commerce, the wonder is not that we have accomplished so much but that we have not accomplished more. The truth is, that we are so absorbed in the daily pursuits of business, in the fierce strife of politics, in the eager rivalry for wealth and in the frivolities of fashion, that we but seldom pause to contemplate the boundless resources of our favored State and to return thanks to God for the goodly heritage He has given us. Of all people who breathe the free air of heaven, we have the best reason not only to be satisfied with our condition, but to be devoutly thankful for the innumerable blessings which we enjoy. I say this in no spirit of exaggeration, but as a fact which is capable of complete demonstration. Let us see if it is so.

In the first place, good health is essential to the happiness of every human being. The poor invalid, pining on his bed of anguish, is blind to the beauties of nature, deaf to the "concord of sweet sounds," indifferent to all the appliances of luxury and art, and consumed with the longing, eager desire for renewed health. In no other country can there be found such assurance of good health as in California. With a genial, agreeable climate, subject to but few variations in temperature, with an atmosphere of wonderful purity, kept fresh and sweet by the trade winds from the Pacific, and with no summer showers to produce a putrid mass of decaying vegetable matter in the summer months, it is not a matter of surprise that robust health is the general rule, and serious sickness, except from constitutional or abnormal causes, is the rare exception. All strangers observe the beautifully developed forms, the rounded limbs, swelling bust and rosy cheeks of California children; and with a climate so favorable to sound health and muscular development, if we shall properly train the moral and mental faculties, the men and women hereafter to grow up in California will furnish the first types of the Anglo-Saxon race. The time is not distant when invalids from all parts

of the world will flock to California to avoid the extreme cold of Northern winters, the sultry heat of Southern summers, and to breate the health-giving breezes of our mountains and valleys.

The great continental railway will soon bring us crowds of such visitors, who will pause amidst the sublime scenery of the Sierras to drink in renewed health by the shores of Donner Lake, or to fish for trout in the pellucid waters of Lake Tahoe; after which they will find their way to the world-renowned Yosemite, to the celebrated Geysers, to Calistoga, and other fashionable watering places. They will see our magnificent bay and our great commercial emporium. They will ramble through our beautiful valleys, and partake of our delicious fruits. They will pluck oranges and lemons, fresh from the trees, at Los Angeles; delicious peaches from the orchards of Yuba and El Dorado; luscious figs from the gardens of Sacramento; monster strawberries from the vines of Santa Clara; splendid grapes from the vineyards of Sonoma and Contra Costa; and magnificent plums and pears from any place at which they happen to be. They will drink pure soda water as it bubbles up from its native fountain at Napa, or at the Saratoga of the Pacific. They will feast on raisins made from California grapes, and grow merry upon wines from California vineyards. They will sleep under the finest blankets in the world, made from California wool, at California factories. They will replenish their wardrobes with splendid woollen cloths of California make; and, if need be, the ladies of the party can, ere long, purchase fine dresses, woven in California looms, from California silk. In travelling, they will be conveyed in fine coaches of California make, in magnificent steamers constructed in California, or over good railroads built at the rate of three miles per day.

Is this a mere fancy sketch? or is it not, on the contrary, the soberest of realities? We all know that there is not the least exaggeration in the picture; and another year will witness just such crowds of visitors as I have predicted—not only from the Atlantic States, but from Europe—who will come as invalids in pursuit of health, but will remain from choice when they shall have realized the true condition of affairs.

But our climate is not all that we have to be thankful for. On the contrary, we have a soil of such unexampled fertility, and capable of producing such a variety of useful crops, as to open up avenues of untold wealth in the future. Long after our mines shall have been exhausted, when quartz mills and crushers, "long toms" and rockers, flumes and sluices, amalgamating pans and roasting furnaces, shall, with us, be remembered only as things of the misty past, and cherished like some golden dream of childhood, our waving fields of grain, our vine-clad hills, our countless herds dotting the mountains and valleys, our groves of mulberry feeding many millions of the silkworm, our teeming orchards and blooming gardens, will present a scene of rural beauty and of agricultural wealth which no other country can rival. Only think of what we have already accomplished and are now doing in that respect. In eighteen hundred and fifty-three, flour at San Francisco was worth forty dollars per barrel, and we paid in one year six or eight millions of dollars for breadstuffs imported into this State. This was but fifteen years ago. In this year of grace, eighteen hundred and sixty-eight, it is computed that our crop of wheat alone will amount to about twenty millions of bushels, more than one-half of which will be sent abroad at remunerative prices. Last year we shipped large quantities of flour to New York, and sold it at a profit, after paying three dollars per barrel for freight. Very large shipments of grain were also

made to Europe, with the same favorable results. Thus, in the great grain markets of the world California already occupies a conspicuous place, noted not only for the quantity produced, but for the excellence of its quality. Let it be remembered that we as yet have a population of only about five hundred thousand, whilst we have about sixty-five millions of acres suitable for agricultural purposes, less than two millions of which are in actual cultivation. When it is borne in mind that, owing to the amazing fertility of the soil and the variety of its products, a family can be maintained in comfort upon an area incredibly small, as compared with other countries, it requires no prophetic vision to foresee that, when our unoccupied millions of acres shall be reduced to cultivation, and improved methods of culture shall be introduced, we can not only support a population of many millions, but California must, of necessity, become one of the richest agricultural districts on the habitable globe.

It is, therefore, to the farmer, the honest tiller of the soil, that we must chiefly look for the highest development of our material wealth. And here let me inquire, what other country wears so captivating an aspect to the thrifty, enterprising, industrious farmer? His lands will produce from twenty-five to thirty bushels of grain per acre, with moderate care; and the next year he will get a good volunteer crop of twelve or fifteen bushels to the acre, without sowing. His grain is free from weevil, but seldom damaged by rust or smut, can be harvested without fear of rain, and then thrashed and piled up in the field until sent to market. The winters are so mild that but little fuel is required, and, for the same reason, stock demand but little feeding. When we add that all kinds of stock thrive and grow beyond precedent, comparatively free from disease, and that the most delicious fruits and the finest vegetables abound on every side, we complete the picture of this farmers' elysium. But why need I repeat facts which you all know better than I? Why weary you with dry details, which are as familiar to you all as the days of the week? Suffice it to say, that whilst these millions of acres remain untilled, let no ungrateful wretch complain that he can find no work for his hands to do in California. Instead of loafing about the cities earning a precarious living, often by questionable methods, and daily complaining of a lack of employment, let him go into the country and rent, if he cannot buy, a small piece of land. If he will then go to work upon it with courage and industry, abstain from vices, deport himself honestly, and thank God that his lot has been cast in so goodly a land, he will soon have cause of gratitude to me for this advice. If unmarried, he will soon be worthy to become the husband of some honest girl, which, if he be a sensible man, he will consider it his bounden duty to do.

But it is not in agriculture alone that the future wealth and grandeur of California are to find their culminating point. Much of the raw material we produce must be fashioned by the cunning skill of the artisan into new forms of beauty and utility. Our wool must be woven into cloths, carpets and blankets; our silk into beautiful fabrics, to adorn our wives and daughters, and to lend an additional grace to fair women in other lands. The rough marble in our quarries must be hewn into forms of grace and beauty, to adorn our dwellings, or perchance to perpetuate our names by means of urns and obelisks. Our fine woods must be carved and polished into shapes of symmetry for use or ornament, whilst our coarser woods are transferred into clipper ships or ocean steamers. In short, manufacturing and mechanical skill is the twin sister of agriculture, and the two have thus far advanced in California like two young

maidens, hand in hand; at first, with timid, faltering steps, as if doubtful whether to proceed; but later, with the firm, elastic tread of two coquettish damsels who feel well assured of an easy triumph. In fact, the struggle is already ended and the victory won. A State with only a half million of inhabitants, which can raise in a single year twenty millions of bushels of wheat, ten millions of pounds of wool and twelve millions of gallons of wine, is already on a firm and stable footing, as regards its agricultural interests; and when it can build such steamboats as now ply on our waters, manufacture such woollen fabrics as we have seen on exhibition, such steam engines as our foundries turn out, such superb cutlery as we now produce, such magnificent furniture, such beautiful carriages, such excellent boots and shoes, such splendid glass-ware and pottery, and a thousand other articles which I have not space to enumerate, we may well conclude that California is rapidly assuming a high position amongst those States most justly renowned for mechanical skill and manufacturing enterprise; but we require something in addition to all this to make us a really great and prosperous people. It has been truly and beautifully said that commerce is the hand-maid of agriculture and manufactures, ready to do their behests and always awaiting their commands. It is its province to promote an interchange of commodities between nations as well as between individual citizens. Without its aid our surplus grain would rot in our storehouses; our native wines would find no purchasers; our beautiful woollen fabrics would cease to exist, and our magnificent floating palaces would decay at their docks. No more railroads would be built, and the shrill music of the steam whistle would no longer startle the echoes in our mountain gorges.

Our commerce, though yet in its early infancy, gives promise of a vigorous youth and a robust maturity. In this respect, also, nature has lavished her gifts upon us most profusely. She has spread out before us the great Pacific ocean, which is already whitened with the sails of all civilized nations; and has carved out from amongst our hills a magnificent harbor, in which all the navies of the world might safely ride at anchor. She has placed us in a temperate climate, midway between the northern snows and tropical heats, as if to allure toward our shores the products of the Arctic and the Torrid zones. She has confronted us with the vast hordes of China and Japan, upon whom the light of a true civilization is but beginning to dawn. She has filled our mountains with silver and gold, which are the great mediums of exchange throughout the world. She has covered our hills with magnificent forests, to supply us with clipper ships, and with rich copper mines to furnish the fastenings. She has placed us in the direct line of travel, by the nearest route, between Europe and the East Indies. In short, she has so arranged it that California must of necessity command the trade of this vast ocean; and that San Francisco shall become the key to a great commerce, whose ramifications will penetrate every corner of the civilized world.

Nor have we been slow to avail ourselves of these great advantages. Large fleets of clipper ships, built expressly for our trade, ride at anchor in our noble bay. Splendid ocean steamers convey passengers and freights up and down our coasts, while our inland waters are daily vexed with the keels of heavily laden vessels. Railroads traverse our valleys in many directions, and more are being rapidly constructed. The merchants of San Francisco have erected a magnificent exchange for the conduct of commercial transactions; whilst our bankers receive and send forth from their marble palaces daily streams of gold, to fructify industry

and invigorate our commerce. In addition to all this, we have recently established a line of ocean steamers to China and Japan, which is to open a new chapter in the history of those ancient and mysterious nations. Their musty secrets are to be revealed, their habits and modes of life scrutinized, their industries examined and their commerce vastly enlarged. To the people of California this enterprise is one of immense significance. It foreshadows a commercial intercourse with those rich and populous empires which at an early day will swell into vast proportions as seriously to affect the great channels of trade throughout the world; and there are some persons who are sanguine in the belief that, owing to our central position on the great highway of travel, between the Occident and the Orient, the day is not far remote when San Francisco will become, as London now is, the great centre of exchange for the whole world.

But the ocean line to China and Japan would be comparatively of little value unless it connected with a railway across the continent. This great link in the highway of nations is already nearly an accomplished fact. The summits of the Sierra Nevada and the Rocky Mountains have been scaled by the iron horse, who has frightened the buffalo and the grizzly bear from their accustomed haunts, and is pushing his triumphant way rapidly across the arid plains of the Great Basin. In a few short months this gigantic work will stand forth, in all its beautiful and grand proportion, an accomplished fact, a marvel of engineering skill, a noble monument of national and individual enterprise; no longer a myth, a chimera of the brain, but a glorious, visible, tangible reality, creating and dispensing wealth, peopling the desert places, building up towns and cities, with churches and school houses, and distributing abroad the rich products of our own and other lands. I shall thank God if I shall be permitted to live to witness this realization of so grand a scheme of national improvement. In the year eighteen hundred and fifty-one, whilst residing at St. Louis, I delivered an address on the occasion of breaking ground for the construction of the Hannibal and St Joseph Railroad, in the State of Missouri; and on that occasion I said: "The time is not far distant when you will be able to travel from St. Joseph, on the Indian frontier, to Boston, the heart of New England, or from New Orleans, on the Gulf, to New York, on the Atlantic, in the space of three days. Nor, I hope, is the day very remote, when the costly fabrics of the East Indies and the gold of California will be conveyed from the El Dorado of the Pacific to St. Louis, the metropolis of the west, in the short space of five or six days." I then had but a faint hope that I should live to see this prediction verified; and yet, seventeen years later, here I am to-day, in the Capital of California, at the opposite end of the great railway, within a stone's throw of its locomotives, as they come thundering down from the summit of the Sierra Nevada, eight thousand feet above the level of the sea, and rejoicing with you at the near consummation of this great enterprise! Having aided to inaugurate its commencement, at one of its Eastern termini, I shall esteem myself doubly fortunate if it shall be my lot to unite with you at its Western termins, in celebrating its completion. The day on which the first through train from New York arrives at Sacramento will mark a new epoch in our history, and should be celebrated with bonfires and the ringing of bells, to attest our appreciation of it.

Having thus discussed in a most discursive manner our condition and prospects as an agricultural, manufacturing and commercial people, it may naturally be expected that some space should be devoted to our

mining interests, which have hitherto engrossed so large a share of public attention, and have exerted so tremendous an influence upon our own and other States. But the theme is too prolific to be condensed within the narrow space which I could allot it, and must be deferred to some future occasion, if such an one should occur.

But, in conclusion, I beg to remind you that material wealth alone is not the only nor the chief foundation of national greatness or individual happiness If the sails of our ships should whiten every sea; if we should find a Comstock ledge in every county in the State; or an Amador mine at every cross road; if every trader were a merchant prince, and every farmer a millionaire, our gold would turn to worthless dross, and our riches become a hideous nightmare, unless we combined with them virtue, intelligence, patriotism and high moral principle. Without these we should be but an ignoble race, and would quickly fall into a premature decay.

It is, therefore, our solemn duty, not only to practice and inculcate these virtues, but to instil them into our children, who are quickly to succeed us. As the most potent means to accomplish this end, we must build up, foster and liberally support our schools and seminaries of learning. The sons and daughters of our farmers must be something more than farm laborers and household drudges. They must be intelligent and cultivated men and women, profoundly imbued with patriotic feeling and with high moral principle, before we can safely confide to them the future destiny of this glorious young State. Our public and private schools have already attained a high degree of proficiency, but a great deal in that respect yet remains to be accomplished, and I hail it as one of the great events of the day, that a State University is soon to be established on a liberal basis, which will bring the means of a thorough education within the reach of all. But there is an important means of education outside of schools and colleges which should not be overlooked. Let every farmer inculcate upon his children a taste for reading, a fondness for literature; let him furnish them liberally with suitable books and newspapers, and particularly those pertaining to agriculture and horticulture. He will quickly find that he has planted a germ which will rapidly expand into usefulness and beauty. As yet our State has not been prolific in such publications; but we have one, the *California Farmer*, first issued in January, 1854, and which, amidst many discouragements, has been diffusing light and knowledge on such subjects for more than fourteen years past. Such enterprise and perseverance as this deserves a generous reward; and, in this age of progress, it is to the public press that we are in a great measure indebted for the rapid strides we are making towards a yet higher civilization.

And now, my friends, it only remains for me to congratulate you on the brilliant future which awaits this grand young State, and the bright prospects which are opening out before the farmers of California. With a country so favored by nature, so blessed of God, in all that contributes to the happiness of man, with a wise and benificent form of government protecting us in our rights of person and property, stimulating enterprise, diffusing intelligence and dispensing its kindly but invigorating influence through all the pursuits of life, if we perform our duty as intelligent, patriotic and upright men and women, California will soon become the brightest star which is emblazoned on our national flag—the crowning gem in our nation's diadem.

ADDRESS BY GENERAL J. BIDWELL.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER EIGHTEENTH, EIGHTEEN HUNDRED AND SIXTY-EIGHT.

About nine P. M. John Bidwell, of Butte, was introduced to the audience by I. N. Hoag, and delivered a neat and forcible speech, commencing by extolling the exhibition as far surpassing its predecessors. He said that if we went on progressing in the future as we had done in the past, hardly any man could anticipate our future greatness; but although we had done much, much still remained to be done. Wherever he had been upon the Atlantic seaboard, he had found a dearth of general intelligence concerning California—her products and her capacity. It would redound to the great benefit of this State if there should be sent to the Department of Agriculture at Washington, from some reliable source, specimens of our cereals and other products, properly labelled and glass-jarred. He had raised some wheat upon his farm which he defied anybody to beat, and he would like to have some of that wheat exhibited in the Patent Office at Washington. He was told there was some wheat in the exhibition which could beat his; if so, all he could say was that it must be exceedingly good, for he believed his wheat to be the best ever raised in California. It would be of real advantage to the State, in his judgment, if the State Agricultural Society would collect and forward specimens of our products to the Agricultural Bureau at Washington If the masses upon the Atlantic seaboard could see a worthy exhibition of our products, thousands would come here who had at present no idea of leaving the East. He really believed that within the next five years the population of this State would be more than trebled, and thought that our State was capable of sustaining many millions of inhabitants. In the way of manufactures we could, even now, in our infancy, compete in the quality of the articles manufactured, with any country in the world. We were only in the morning dawn of our existence, and our career was onward and upward. The great labor question of our country, he thought, would solve itself. He believed the steam plow, if not already a success, was assuredly destined to be so in a short period. He believed that steam, that great power which was now moving the world, would eventually, and that at no distant period, be applied to pulverizing the ground; and that was nearly the whole secret of farming. Failure of good crops generally resulted from want of proper plowing—proper pulverizing of the soil The old plow should be thrown away; it would not answer, as it rather polished than pulverized the soil. Nothing but steam would accomplish the latter purpose. When he gazed around him and saw what had been accomplished in this State, and then looked forward and attempted to grasp its future, he was overwhelmed. He was proud to be a citizen of the United States, and proud to be a resident of California, the brightest part of all America. We had surmounted every obstacle in the way of making our country respected, permanent and great, and we were imbued with all the elements of perpetuity; there was no nation in the world that would nor dare to attack us. We were able to compete with foreign nations either in the pursuits of peace or on the field of battle, and there was no taller man upon this globe than a free American citizen.

TRIALS OF SPEED IN 1868.

TUESDAY, SEPTEMBER 15TH.

FIRST TRIAL.

Trotting Race.—Mile heats; free for all stallions; purse—three hundred dollars.

Entries.

J. B. Gallar enters b. s. Hiram Woodruff.
C. H. Shear enters g. s. Paddy Magee.
P. Hopkins enters br s. Ben Franklin.

Result.

Paddy Magee	1	1	1
Ben. Franklin	2	3	dis.
Hiram Woodruff	3	2	2

Time—2:43; 2:33¼; 2:34½.

SECOND TRIAL.

Trotting Race—Mile heats; three in five; free for all horses that have never beaten two-fifty; purse—one hundred and fifty dollars.

Entries.

J. B. Gallar enters g. g. Robin Rough.
C. H. Shear enters b. g Broderick.
L. G. Butler enters dun g. Billy Poorman.
O. Lewis enters b. g. General Grant.
I. La Rook enters ch. m. Columbia Maid.

Result.

Billy Poorman	2	2	1	2	1	1
General Grant	3	1	2	1	4	dis.
Robin Rough	1	3	3	3	2	2
Columbia Maid	4	4	4	4	3	dis.
Broderick	dis.					

Time—2:44; 2:43¼; 2:43¾; 2:43¼; 2:46¾.

WEDNESDAY, SEPTEMBER 16TH.

FIRST TRIAL.

Running Race.—Two-mile heats; free for all; purse—four hundred dollars.

Entries.

C. S. Williams enters b. s. Compromise, sired by Langford; dam, Fanny Howard, by Medoc.
N. Coombs enters ch. sorrel Glenwild, sired by Billy Cheatham; dam, Emma Taylor, by imp. Glencoe.
John Hall enters Isola, sired by Colossus; dam, Zador, by imp. Belshazzar.
Thomas Atchison enters Bloomsbury, sired by Boston; dam by Orphan Boy.

Result.

Bloomsbury	2	1	1
Isola	3	3	2
Compromise	1	2	3
Glenwild	4	dis.	

Time—3:39; 3:44¾; 3:48.

SECOND TRIAL.

Running Race.—Mile and repeat; free for all three year olds; purse—three hundred dollars.

Entries.

Thomas Winters enters b. m. Lou. Barnes; sire, Belmont; dam. Evadne, by Winnebago.
C. S. Williams enters b. s. Kirby Smith; sire, Gladiator; dam, U K.
R. T. O'Hanlon enters Cricket, by Rifleman; dam, Fashion, by Belmont.

Result.

Lou. Barnes	1	1
Kirby Smith	2	2
Cricket	3	dis.

Time—1:49½; 1:49¾.

THURSDAY, SEPTEMBER 17TH.

FIRST TRIAL.

Trotting Race.—Three in five; free for all; purse—three hundred dollars.

Entries.

J. L. Eoff enters bl. g. J. G. Downey.
B. Rice enters b. g. Gus Bilger.
J. B. Gallar enters b. m. May Queen.
Chas. H. Shear enters g. s. Paddy Magee.

Result.

May Queen	1	1	1
J. G. Downey	2	2	2
Paddy Magee	dis.		
Gus Bilger	dis.		

Time—2:29; 2:29½; 2:31.

SECOND TRIAL.

Trotting Race.—Mile heats; three in five; free for all six year olds, or under, raised in California; purse—three hundred dollars.

Entries.

W. C. Merrill enters b. h. Jim.
John Thompson enters g. g. C. W. Moulthrop.
J. Daniels enters b. g. Regulator.

Result.

Moulthrop	1	1	2	2	2
Regulator	2	2	1	1	1
Jim	dis.				

Time—2:41½; 2:37; 2:32¾; 2:35¾; 2:33¼.

FRIDAY, SEPTEMBER 18TH.

FIRST TRIAL.

Running Race.—Two-mile heats; free for all three year olds; purse—four hundred dollars.

Entries.

Thomas Atchison enters dark b. m. White Stocking, by Volcian; dam, U K; three years old.
Theo. Winters enters b. f. Lou. Barnes, by Belmont; dam, Evadne, by Winnebago.
C. B. Lusk enters Cricket, by Rifleman; dam, Fashion, by Belmont.

Result.

Lou. Barnes	1 1
White Stocking	2 2
Cricket	withdrawn.

Time—3:55 2-5; 4:02½.

SECOND TRIAL.

Running Race.—Mile and repeat; free for all; purse—three hundred dollars.

Entries.

N. Coombs enters ch. g. May-be-so, by Ashland; dam, Becky Rector, by Medoc.
J. F. Walker enters s. s. Lancaster, by Owendale; dam, U K; four years old.
R. T. Leet enters b. s. Ten Brock, by Cosmo; dam, Fanny Howard.

Result.

May-be-so	1 1
Lancaster	2 2
Ten Brock	3 3

Time—1:49½; 1:51¼.

SATURDAY, SEPTEMBER 19TH.

FIRST TRIAL.

Trotting Race.—Two miles and repeat; free for all; purse—four hundred dollars.

Entries.

J. L. Eoff enters b. g. J. G. Downey.
B Rice enters b. g. Gus. Bilger.
J. B. Gallar enters b. m. May Queen.

Result.

Downey	1 1
Bilger	2 2
May Queen	withdrawn.

Time—5:17½; 5:16¾.

SECOND TRIAL.

Trotting Race—Mile heats; three in five; free for all horses that have never shown better than two forty-five; purse—two hundred dollars.

Entries.

L. G. Butler enters b. m. Lady Belle.
J. G. Gallar enters g. g Roscoe.
Pat. Farrell enters bk. m. Jersey Maid.

Result.

Lady Belle	1	1	dis.
Jersey Maid	2	2	1
Roscoe	dis.		

Time—2:44; 2:36¾; 2:40.

MONDAY, SEPTEMBER 21ST.

FIRST TRIAL.

Race.—Free for all trotters and pacers; three-mile heats; purse—five hundred dollars.

Entries.

S. Daniels enters ch. s Bob Burns.
J. L. Eoff enters bl. h. J. G. Downey.
Pat. Farrell enters s. g. Longfellow.

Result.

Longfellow	1	1
Downey	2	2
Bob Burns	dis.	

Time—7:53; 8:11.

SECOND TRIAL.

Trotting Race.—Mile heats; three in five; free for all four year olds or under; purse—one hundred and fifty dollars.

Entries.

Geo. Ingles enters dk. b. s. F. F. Low.
J. A. Mayfield enters g. h. Billy Haywood.
Geo. Evans enters b. f. Harvest Queen.

Result.

F. F. Low	1	1	1
Harvest Queen	2	2	2
Billy Haywood	3	dis.	

Time—2:41¾; 2:44; 2:42¼.

TUESDAY, SEPTEMBER 22D.

FIRST TRIAL.

Running Race.—Single dash of three miles; free for all; purse—three hundred dollars.

Entries.

J. N. King enters b. m. Dolly.
John Hall enters b. m. Isola.
E. S. Williams enters b. s. Compromise.

Result.

Compromise	1
Isola	2
Dolly	withdrawn.

Time—5:44½.

SECOND TRIAL.

Running Race.—Mile heats; three in five; free for all second-class horses; purse—two hundred and fifty dollars.

Entries.

Theo. Winters enters b. m. Nevada.
D. P. Diggs enters s. m. Red Morocco.
N. Coombs enters ch. g. May-be-so.
C. S. Williams enters b. s. Kirby Smith.
James Welsh enters s. s. Ben Franklin.
J. B. Holland enters s. m Ellen Moore.

Result.

May-be-so	1	1	2	4	1
Ellen Moore	2	2	5	5	dis.
Ben Franklin	3	5	4	3	dr.
Kirby Smith	4	3	1	1	2
Nevada	5	4	3	2	3
Red Morocco	6	dis.			

Time—1:48; 1:49¼; 1:49¾; 1:50; 1:49¾.

THIRD TRIAL.

Running Race.—Mile heats; free for all two year olds; purse—one hundred and fifty dollars.

Entries.

Theo. Winters enters b. c. Ramrod, by Rifleman; dam, S. Davis.
John Hall enters b. c. Sacramento, by Rifleman; dam, Bonny Belle, by Belmont.
N. Coombs enters c. c. Tophet, by Ashland; dam, by Billy Cheatham.

Result.

Sacramento	1	2	1
Tophet	2	1	2
Ramrod	3	3	dis.

Time—1:50 2-5; 1:51½; 1:53.

WEDNESDAY, SEPTEMBER 23D.

FIRST TRIAL.

Pacing Race.—Mile heats; three in five; free for all; purse—three hundred dollars.

Entries.

C. H. Shear enters gr. m Empress.
L. G. Butler enters b. g. Mike O'Brien.
M. Doil enters g. g. Wonder.
Pat. Farrell enters s. g. Longfellow.

Result.

Longfellow	1	1	1
Empress	2	2	2
Mike O'Brien	3	dis.	
Wonder	dis.		

Time—2:28; 2:35¾; 2:36½.

SECOND TRIAL.

Double Team Race.—Mile heats; three in five; free for all trotters; purse—five hundred dollars.

Entries.

J. B. Gallar enters g. g. Glencoe Chief and ch. s McClellan.
C. H. Shear enters g. s. Paddy Magee and sorrel Charley.
John Daniels enters b. g. Regulator and bl. g. Downey.

Result.

Glencoe Chief and mate	1	1	1
Regulator and mate	2	2	2
Paddy Magee and mate	dis.		

Time—2:48; 2:40¾; 2:42.

THURSDAY, SEPTEMBER 24TH.

FIRST TRIAL.

Running Race.—Mile heats; three in five; free for all; purse—four hundred dollars.

Entries.

Thos. Atchison enters b. s. Bloomsbury, by Boston, out of dam of Orphan Boy.
C. T. Williams enters b. s. Compromise, by Langford; dam, Fanny Howard, by Medoc.
S. Daniels enters Lucy Long, by Medoc; dam, U K.

Result.

Compromise	Dead heat for all three.	1	1	1
Bloomsbury		2	2	2
Lucy Long		dis.		

Time—1:50; 1:52¾; 1:50; 1:51¾.

SECOND TRIAL.

Running Race.—Mile and repeat; free for all beaten horses; purse—three hundred dollars.

Entries.

J. T. Walker enters s. e. Lancaster, by Owen Dale; dam, U K.
John Holland enters s m. Ellen Moore, by George Moore; dam, U K.
C. S. Williams enters b. s. Kirby Smith, by Gladiator; dam, U K.

Result.

Lancaster	3	1	1
Ellen Moore	1	3	3
Kirby Smith	2	2	2

Time—1:58¾; 1:47½; 1:50¼.

FRIDAY, SEPTEMBER 25TH.

FIRST TRIAL.

Race.—Five miles out; free for all trotters and pacers; purse—five hundred dollars.

Entries.

Pat. Farrell enters s. g. Longfellow.
S. Daniels enters s. h. Bob Burns.
Dan. Denison enters s. g. April Fool.
J. A. Mayhue enters b. g. Dick Gough.

Result.

Longfellow	1
Dick Gough	2
Bob Burns	3
April Fool	4

Time.—First mile—2:44¼; second mile—2:45; third mile—2:46¾; fourth mile—2:51; fifth mile—2:42½. Total—13:49.

SECOND TRIAL.

Trotting Race.—Mile heats; three in five; free for all horses that have never beaten two-forty; purse—two hundred dollars.

Entries.

John Daniels enters Robinson Crusoe.
Samuel Daniels enters ch. s. McClellan.
S. C. Bowley enters dun m. Jersey Maid.
C. B. Lush enters s g. Sorrel Charley.
I. La Rook enters b. s. Ben Franklin.
Mike Murphy enters r. m. Genoa Maid.

Result.

McClellan	1	2	1	1
Sorrel Charley	2	1	2	2
Jersey Maid	3	3	dis	
Ben. Franklin	5	5	dis.	
Genoa Maid	4	4	dis.	
Robinson Crusoe	drawn.			

Time—2:40½; 2:39¾; 2:38; 2:43½.

THIRD TRIAL.

Trotting Race.—Mile and repeat; free for all three year olds; purse—one hundred and fifty dollars.

Entries.

Pat. Farrell enters s g. Westfield.
J. L. Eoff enters b. m. Smith Mare.
George Evans enters b. s. Ajax.

Result.

Ajax	1
Westfield	dis.
Smith Mare	drawn.

Time—2:55.

PREMIUMS AWARDED IN 1868.

FIRST DEPARTMENT.

THOROUHBRED HORSES.

Exhibitor.	Residence.	Animal.	Premium.
		Stallions.	
John Hall	Alameda	Best stallion, four years old and over—Woodburn	$50
John Hall	Alameda	Best stallion, three years old and over—Jonathan	$40
L. P. Marshall	Sacramento	Best stallion, two years old and over—Medoc	$30
John Hall	Alameda	Best stallion colt, under one year—Ulys	$15
		Mares.	
John Hall	Alameda	Best mare, four years old and over, with colt—Moss Rose	$50
R. T. Leet	Sacramento	Best mare, four years old and over—Flora Gardner	$40
Theodore Winters	Solano	Best mare, two years old—Maggie Dale	$25
R. T. Leet	Sacramento	Best mare colt, under one year—Florita	$15

HORSES—FAMILIES.

Exhibitor.	Residence.	Animal.	Premium.
Daniel Flint	Sacramento	Best dam, other than thoroughbred, with not less than three colts—Netty Bly, and her three colts—Yankee Blade, Maid of the Mist and Sam Patchen	$40
J. G. McCracken	Sacramento	Best stallion, other than thoroughbred, with not less than ten of his colts—David Hill, and family—David Hill, Jr., Forney, Fred, Dexter, Aliee Clapp, Victoria, Runyon, Dash, War Eagle and Manassas	$75

HORSES OF ALL WORK.

Exhibitor.	Residence.	Animal.	Premium.
		Stallions.	
J. G. McCracken.....	Sacramento....	Best stallion, four years old and over—David Hill, Jr.....	.....$40
S. Treat.....	Sacramento....	Best stallion, three years old and over—Comet.....	.....$30
J. C. Clark	Sacramento....	Best stallion, two years old—Green Mountain Boy.....	.....$20
A. B. Burnes.....	Sacramento....	Best stallion, one year old—Young Bacchus.	.....$15
		Mares.	
C. H. Shear.....	Sacramento....	Best mare, four years old and over, with colt—Alice Mandeville and colt.	.....$40
W. M. Allen.....	Solano	Best mare, four years old and over—White Stocking.....	.....$30
John Brewster.....	Sacramento....	Best mare, three years old—Woodbridge Filly.....	.....$20
S. Treat.....	Sacramento....	Best mare, two years old—Dash	.....$15
J. G. McCracken.....	Sacramento....	Best mare, one year old—Alice Clapp.....	.....$10

GRADED HORSES.

Exhibitor.	Residence.	Animal.	Premium.
		Stallions.	
C. B. Hoffman.....	El Dorado.....	Best stallion, four years old and over—Lexington.....	.....$40
D. Frame.....	Sacramento....	Best stallion, three years old—G. W. Moore.....	.....$30
Thomas Day.....	.....	Best stallion, two years old—Chas. Hosmer.....	.....$20
C. B. Hoffman.....	El Dorado.....	Best stallion, one year old—Mike Riddle.....	.....$15
Thomas Edwards....	Sacramento....	Best colt, under one year, either sex—Norfolk Rattler.....	.....$15
		Mares.	
Thomas Edwards....	Sacramento....	Best mare, four years old and over, with colt—Nettie and colt..	.....$40
A. Musick.....	Sacramento....	Best mare, four years old—Sallie Franklin.....	.....$30
A. Musick.....	Sacramento....	Best mare, two years old—Polly Moore.....	.....$15
C. B. Hoffman.....	El Dorado.....	Best mare, one year old—Ida Menkin.....	.....$10

NOTE.—We, the committee, find that Theodore Winters has Ramrod entered in class of two year old graded stallions for competition, and entered him in a race for two year olds, and for such cause is excluded from premiums.—*Committee.*

DRAFT HORSES.

Exhibitor.	Residence.	Animal.	Premium.
		Stallions.	
H. Wilsey	Sonoma	Best stallion, four years old and over—Young Raleigh	$30
J. R. Northrup	Sacramento	Best stallion, two years old—Young Wallace	$15
		Mares.	
R. S. Carey	Yolo	Best mare, three years old—Katy Gregg	$20
William Bandeen	Sacramento	Best mare, two years old—Lade	$15
W. B. Gibson	Yolo	Best mare, one year old—Clydesdale	$10

ROADSTER HORSES.

Exhibitor.	Residence.	Animal.	Premium.
		Stallions.	
A. J. Rhoads	Sacramento	Best stallion, four years old—General Taylor	$40
J. Zumalt	Sacramento	Best stallion, three years old—Capitol Boy	$30
Daniel Flint	Sacramento	Best stallion, two years old—Sam Patchen	$20
J. W. Thompson	Plumas	Best gelding, four years old and over—Sam	$30
		Mares.	
A. Guerrero	San Francisco.	Best mare, four years old and over—Jennie Noyes	$30
A. F. Smith	Sacramento	Best mare, three years old—Lady Woodruff	$20
A. Neubaur	Sacramento	Best mare, two years old—Charlotte	$15
		NOTE.—Lady Bell trotted in a race for society's purse, and is therefore excluded from competition for premium, according to rules.—*Committee.*	
Jno. C. Morrison, Jr.	San Francisco.	Best matched team of carriage horses—Kate Allen and Hettie Allen, Bangor and Norwich, and Hebe and Psyche	$40
E. M. Skaggs	Sacramento	Best double team roadsters—Lady Bell and Lady Washington	$10
		NOTE.—Roscoe and Robin Ruff, having trotted in a race, are excluded from taking premium.—*Committee.*	
R. S. Carey	Yolo	Best saddle horse—Tom	$15

COLTS.

Exhibitor.	Residence.	Animal.	Premium.
		Horse.	
A. J. Rhoads	Sacramento	Best yearling—Jim Moore	$30
W. A. Boggs	Sacramento	Best suckling—Young Taylor	$20
		Mare.	
C. Gosling	Sacramento	Best yearling—Jessie	$20
L. A. Upson	Sacramento	Best suckling—Rosalie	$15
C. Gosling	Sacramento	Best exhibit of not less than six colts, owned by one person, of any sex or age—Flora's family of eight colts	$50

SWEEPSTAKE HORSES.

Exhibitor.	Residence.	Animal.	Premium.
Whipple and Teakle	San Mateo	Best stallion of any age—Speculation	$100
R. T. Leet	Sacramento	Best mare of any age—Flora	$75

JACKS AND MULES.

Exhibitor.	Residence.	Animal.	Premium.
E. Jacobs	Sacramento	Best jack—Sampson	$50
Thomas Edwards	Sacramento	Best jennet—Lady Franklin	$40
Marion Biggs, Jr.	Sacramento	Best pair mules—Dolores and Mariquita	Silver cup
Perry Sears	Sonoma	Best mule colt	Silver cup

DURHAM CATTLE.

Exhibitor.	Residence.	Animal.	Premium.
G. N. Swezy	Yuba	Best bull, four years old and over—Apis	$40
G. N. Swezy	Yuba	Best cow, four years old—Kate Dunn	$30
G. N. Swezy	Yuba	Best heifer calf—Snowflake	$10
G. N. Swezy	Yuba	Best cow, one year old—Beauty	$15

DEVON CATTLE.

Exhibitor.	Residence.	Animal.	Premium.
		Bulls.	
Seneca Daniels	Sonoma	Best bull, four years old and over—Pacific	$40
J. K. Rose	Sonoma	Best bull, three years old—Bloomfield	$25
Seneca Daniels	Sonoma	Best bull, two years old—Buccephalus	$20
Seneca Daniels	Sonoma	Best bull, one year old—Victor	$15
Seneca Daniels	Sonoma	Best bull calf—Puritan	$10
		Cows.	
Seneca Daniels	Sonoma	Best cow, four years old and over—Fashion	$30
Seneca Daniels	Sonoma	Best cow, three years old—Fairy	$25
Seneca Daniels	Sonoma	Best cow, two years old—Annie	$20
Seneca Daniels	Sonoma	Best cow, one year old—Nelly	$15
Seneca Daniels	Sonoma	Best heifer calf—Lassie	$10

AYRSHIRE CATTLE.

Exhibitor.	Residence.	Animal.	Premium.
Seneca Daniels	Sonoma	Best bull, four years old and over—Sir Walter	$40
Seneca Daniels	Sonoma	Best cow, four years old and over—Ruth	$30

GRADED CATTLE.

Exhibitor.	Residence.	Animal.	Premium.
		Bulls.	
G. N. Swezy	Yuba	Best bull, four years old and over—Walsh	$30
M. Wiek	Butte	For bull, four years old and over—Bedford	Special—$10
P. Burns	Sacramento	Best bull, one year old—George	$15
G. N. Swezy	Yuba	Best bull calf—Franklin	$10
		Cows.	
A. W. Butler	Sacramento	Best cow, four years old and over—Peggy	$30
G. N. Swezy	Yuba	Best cow, three years old—Queen	$20
Peter Burns	Sacramento	Best cow, two years old and over—Strawberry	$15
G. N. Swezy	Yuba	Best cow, one year old and over—Jennie	$10
G. N. Swezy	Yuba	Best heifer calf—Amelia	$10

DRAFT CATTLE.

Exhibitor.	Residence.	Animal.	Premium.
C. Luce		Best yoke draft cattle—Bright and Brin	$10

CATTLE SWEEPSTAKES.

Exhibitor.	Residence.	Animal.	Premium.
G. N. Swezy	Yuba	Best bull, of any age—Apis	$50
G. N. Swezy	Yuba	Best cow, of any age—Kate Dunn	$40

SHEEP.

Exhibitor.	Residence.	Animal.	Premium.
Landrum, Butterfield & Co	Santa Cruz	Best stock ram, two years old and over	$10
Landrum, Butterfield & Co	Santa Cruz	Best three ewes, two years and over	$10

SPANISH MERINO SHEEP.

Exhibitor.	Residence.	Animal.	Premium.
		Rams.	
J. D. Patterson	Alameda	Best ram, two years old and over—Kearsarge	$20
Thos. Cotter	Sacramento	Best ram, two years old—Jerome Maddo	$15
J. D. Patterson	Alameda	Best three lambs	$15
		Ewes.	
J. D. Patterson	Alameda	Best three ewes, two years and over	$15
Thos. McConnell	Sacramento	Best three ewes, under two years	$15

FRENCH MERINO.

Exhibitor.	Residence.	Animal.	Premium.
		Rams.	
J. D. Patterson	Alameda	Best ram, two years and over	$20
J. D. Patterson	Alameda	Best ram, under two years	$15
J. D. Patterson	Alameda	Best three ram lambs	$15
		Ewes.	
J. D. Patterson	Alameda	Best three ewes, two years and over	$15
J. D. Patterson	Alameda	Best three ewes, under two years	$15
J. D. Patterson	Alameda	Best five ewe lambs	$15

GRADED SHEEP.

Exhibitor.	Residence.	Animal.	Premium.
		Rams.	
J. D. Patterson	Alameda	Best ram, under two years	$10
Thos. Cotter	Sacramento	Best three ram lambs	$15
		Ewes.	
Thos. Cotter	Sacramento	Best three ewes, two years and over	$10
Thos. Cotter	Sacramento	Best three ewes, under two years	$10

SHEEP—SWEEPSTAKES.

Exhibitor.	Residence.	Animal.	Premium.
Landrum, Butterfield & Co	Santa Cruz	Best buck, of any age or breed—Sir Wallace	$25
J. D. Patterson	Alameda	Best ewe, of any age or breed	$20
J. D. Patterson	Alameda	Best pen of not less than five ewes	$25

CASHMERE GOATS.

Exhibitor.	Residence.	Animal.	Premium.
Landrum & Butterfield	Santa Cruz	Best thoroughbred buck—named Harmless	$20
E. Holland		Best thoroughbred she goat—Annie	$15
Landrum & Butterfield	Santa Cruz	Best pen of three goats, graded	$15

SWINE—SMALL BREEDS.

Exhibitor.	Residence.	Animal.	Premium.
Jas. Robinson	Sacramento	Best boar two years old and over—Cap	$15
Peter Burns	Sacramento	Best boar six months and under one year—Dick	$10
Jas. Robinson	Sacramento	Best sow one year old—Capitola	$10
Jas. Robinson	Sacramento	Best pen of six pigs	$20

POULTRY.

Exhibitor.	Residence.	Animal.	Premium.
Peter Burns	Sacramento	Best lot magpie ducks	$5
A. Devve	Sacramento	Best lot China, English and American geese	$5
P. Burns	Sacramento	Best lot Jersey blue chickens	$5
P. Burns	Sacramento	Best lot white and gray dorkings	$5

RECOMMENDATIONS.

Exhibitor.	Residence.	Animal.	Premium.
Landrum, Butterfield & Co.	Santa Cruz	For one pair Buckwell Leicester, pure bred, also two Lincoln rams, shearlings	Honorable mention.
H. F. Buckley Bros.	Snelling	One Cotswold ram, two Cotswold ram lambs, five Cotswold ewes, one Cotswold ewe lamb	Honorable mention.

SECOND DEPARTMENT.

MACHINERY.

Exhibitor.	Residence.	Article.	Premium.
J. B. Johnson	San Francisco.	Patent friction hoist	First—Diploma.
H. B. Martin	San Francisco.	Oscillating steam engine	Special—Diploma.
H. B. Martin	San Francisco.	Oscillating force pump	First.
H. B. Martin	San Francisco.	Rotary force pump	Special.
G. M. Gerrish	San Francisco.	Submerged double-acting pump	First—Diploma.
Pacific Iron Works	San Francisco.	Fifty-horse-power engine, with patent cut-off	First.
Pacific Iron Works	San Francisco.	Iron shaping machine	First—$10
Robert Blair	San Francisco.	Model steam engine	Special.
Robert Blair	San Francisco.	Two Hendy concentrators	First.
M. and A. Wilcox	Sacramento	Water lifter	First—$10
Detrick & Eckart	San Francisco.	Balance oscillating steam engine	First—Silver medal.
Detrick & Eckart	San Francisco.	Pocket counter, for registering revolutions of machinery	Honorable mention.
J. S. Detrick	San Francisco.	Eccentrical chuck	First—Diploma.
H. B. Martin & Co.	San Francisco.	Oscillating hydrostatic engine	First—Diploma.
M. D. Lasswell	San Francisco.	Suction force pump	First—Diploma.
Charles McLaughlin	San Francisco.	Combination brick press	First—Diploma.
John H. Ball	Grass Valley	Elevator for snow and other substances	Honorable mention.

MACHINERY—Continued.

Exhibitor.	Residence.	Article.	Premium.
Kimball & Hughes	San Francisco.	Tire upsetter	First—Diploma.
W. T. Garratt	San Francisco.	Display of brass work	First—Silver medal.
H. Lake, for N. Lumsden, inventor	San Francisco.	Patent screw machine for making boots	First—Diploma.
S. Rohrer	San Francisco.	Portable forge	Honorable mention.
H. S. Smith	San Francisco.	Dunbar's steam packing	Special.
Union Iron Works	Sacramento	Patent elliptic boiler-tube scraper	Special—Diploma.
Union Iron Works	Sacramento	Automatic lubricator	Special—Diploma.
Charles E. Blake	San Francisco.	Safety valve for fire hose	First—Diploma.
H. Peterson	Antioch	Spring hammer	First—Diploma.
H. Peterson	Antioch	Hydraulic coupling	Honorable mention.
Casebolt & Kerr	San Francisco.	Family carriage	First—$25
G. P. Kimball	San Francisco.	Top buggy	First—Diploma.
G. P. Kimball	San Francisco.	Display of thoroughbrace vehicles	Diploma.
C. A. Fargo	San Francisco.	Farm wagon and brake	First—$10
Betts & Fooks	San Francisco.	California-made carriage springs	First—Diploma.
D. Jones	San Francisco.	Improved iron axles	First—$3
S. W. Voorhies	Vallejo.	Wagon jack	First—Diploma.
I. F. Street	San José	Portable wagon bed	Honorable mention.
R. Rutter	Vallejo.	Floating battery	Special—Silver medal.
Coffin & Standish	Martinez.	Steam plough Mayflower	First—$300 and diploma.
Baker & Hamilton	Sacramento	Two-gang plough	First—$15
W. B. Ready	Sacramento	Three-gang plough	First—$20
E. Kimball	San Quentin	Plough for general use	First—$10
W. B. Ready	Sacramento	Steel plough	First—$10
Marshall & McGowan	Sacramento	Cast iron plough	First—$10
W. B. Ready	Sacramento	Display of ploughs	First—$10
A. M. Burnes	San Francisco.	Self-loading excavator	Diploma.
Marshall & McGowan	Sacramento	Display of agricultural machines of California make	First—$25
Baker & Hamilton	Sacramento	Threshing machine	Diploma.
Baker & Hamilton	Sacramento	Wheat drill, two-horse	First—$5
E. Walton	Stockton	Hay fork	First—$3
P. H. Murphy	Sacramento	Hand corn planter	First—$2
P. H. Murphy	Sacramento	Two-horse corn cultivator	First—$5
P. H. Murphy	Sacramento	Seed sower and coverer, combined	First—$5
D. Flint	Sacramento	Farm gate	First—$3
J. S. Harbison	Sacramento	Beehive	First—$3
T. C. Hammond	Sacramento	Model grading and excavating machine	Honorable mention.
G. C. McMullen	Solano	Washing machine	First—$3
C. Parker	San Francisco.	Clothes wringer	First—$2
F. B. Lamb	San Francisco.	Clothes-horse and dryer	First—$2
J. Dodge	Grass Valley	Garden hoe	First—$2
F. T. Houghton	San Francisco.	Automatic clothes washer	First—Diploma.
B. F. Cook	Napa	Combined thresher, header and separator	Honorable mention.
B. F. & B. Jackson	Yolo County	Grain conveying machine	First—Diploma.
W. M. Jackson	Yolo County	Grain lifter, as an attachment to a header	First—Diploma.
J. N. Seeley	San Francisco.	Mop wringer	Honorable mention.
F. B. Lamb	San Francisco.	Vegetable cutter	Honorable mention.
Colonel Warren	San Francisco.	Churn	First—$2
Baker & Hamilton	Sacramento	Best and largest display imported agricultural implements	Diploma.
Garvey & Kimball	San Francisco.	Door bells and gongs	First—Diploma.

THIRD DEPARTMENT.

TEXTILE AND MILL FABRICS.

Exhibitor.	Residence.	Article.	Premium.
Joseph Newman	San José	Specimens silk manufacture—not less than five yards	First—$20
J. Newman	San José	Specimens of raw silk	First—$10
J. Newman	San José	Silk cravat	First—$10
J. Newman	San José	Silk shawl	First—$20
J. Newman	San José	Silk stockings	First—$10
Mission Woollen Mills	San Francisco.	Display of woollen goods by one factory	First—$50
Mission Woollen M'ls	San Francisco.	Fancy cloaking	Special.
Mission Woollen M'ls	San Francisco.	Fancy flannel	Special.
Mission Woollen M'ls	San Francisco.	Buggy robes	Special.
Oakland Cotton M'ls	Oakland	Cotton goods made by one factory	First—$50
Mission Woollen M'ls	San Francisco.	Ten yards woollen cloth	First—$5
Mission Woollen M'ls	San Francisco.	Ten yards cassimere	First—$5
Mission Woollen M'ls	San Francisco.	Ten yards tweed	First—$5
Mission Woollen M'ls	San Francisco.	Ten yards flannel	First—$5
Mission Woollen M'ls	San Francisco.	Fifteen yards carpeting	First—$5
Mission Woollen M'ls	San Francisco.	Woollen shawl	First—$3
Mission Woollen M'ls	San Francisco.	Mackinac blanket	First—$3
Mission Woollen M'ls	San Francisco.	Woollen blanket	First—$5
Pacific Woollen M'ls	San Francisco.	Stocking yarn	First—$3
Pacific Woollen M'ls	San Francisco.	Display knitted goods	Special.
Pacific Woollen M'ls	San Francisco.	Knitted undershirts	Special.
Pacific Woollen M'ls	San Francisco.	Knitted drawers	Special.
Pacific Woollen M'ls	San Francisco.	Knitted hosiery	Special.
Pacific Woollen M'ls	San Francisco.	Knitted jackets	Special.
Pacific Woollen M'ls	San Francisco.	Ladies' knitted skirts	Special.
Mrs. Horace Adams.	Sacramento	Collection sea shells	First—$3
Mrs. Horace Adams.	Sacramento	Embroidered chair seat	First—$2
Mrs. Horace Adams.	Sacramento	Seaweed bouquet	First—$3
Miss Lulu Adams	Sacramento	Hand sewing	First—Napkin ring.
R. W. Jackson	Sacramento	Pearl, ivory, tortoise-shell and abelone jewelry	Diploma.
Miss Maggie Ormsby	Sacramento	Silk embroidery	Special—Napkin ring.
Miss M. L. Pierce	Sacramento	Silk embroidery	Special—Napkin ring.
Mrs. J. L. Hummel	Sacramento	Silk embroidery	First—$3
Mrs. J. L. Hummel	Sacramento	Embroidered handkerchief	First—$2
Miss Agnes Hummel	Sacramento	Applique work	First—Napkin ring.
Miss Agnes Hummel	Sacramento	Braided toilet set	First—Napkin ring.
Miss Agnes Hummel	Sacramento	Ottoman cover	Honorable mention.
Women's Co-operative Union	San Francisco.	Custom-made shirts and general needlework	First—Diploma.
Miss A. McConnell	Sacramento	Boy's shirt	Special—Napkin ring.
Master E. Jackson	Sacramento	Bead collar and necktie	Honorable mention.
Miss Annie E. Hoag.	Yolo County	Bead collar and necktie	Honorable mention.
Miss Alice Watson	Sacramento	Thirty-two varieties tatting	Honorable mention.
Mrs. J. J. Beebe	Sacramento	Embroidered handkerchief and tatting collar	Honorable mention.
Miss Minnie Tukey.	Sacramento	Braided yoke	Honorable mention.
Mrs. A. B. Woodworth	Sacramento	Mexican needlework	Special—Fruit knife
Mrs. C. E. Barney	Sacramento	Mexican needlework	Honorable mention.
Mrs. S. W. Blackwood	Sacramento	Silk patchwork sofa pillow	First—$2
Mrs. P. Crew	Sacramento	Crochet tidy	Special—Napkin ring.
Mrs. E. P. Figg	Sacramento	Worsted tidy	Honorable mention.
Miss Helen Megerle.	Sacramento	Variety of embroidery	Special—Napkin ring.
Mrs. Gehring	Sacramento	Crochet work	Special.
Mrs. Gehring.	Sacramento	Hair and silk work	Honorable mention.

TEXTILE AND MILL FABRICS—Continued.

Exhibitor.	Residence.	Article.	Premium.
Mrs. J. H. Shaddock	Grass Valley	Crochet collar	First—Napkin ring.
Mrs. J. Bassford	Sacramento	Knit stockings	Special—$2
Miss Ida Lynch	Sacramento	Specimens tatting	Honorable mention.
Mrs. T. J. Winship	San Francisco.	Millinery	First—Diploma.
Miss Mary Batcher	Sacramento	Framed worsted work	First—Diploma.
Miss S. C. Marvin	Sacramento	Child's crochet sack	First.
Miss S. C. Marvin	Sacramento	Hair flowers	Honorable mention.
Mrs. C. Cook	San Francisco.	Hair jewelry	First—Diploma.
Miss Mary Deuden	Sacramento	Sofa cushion	First—$2
Mrs. O. Levey	Sacramento	Knitted curtain	First—Diploma.
Mrs. E. S. Kinsey	Sacramento	Shell frame	First—$3
Miss Lottie Hoffman	Sacramento	Chenille embroidered slippers	First—$3
Miss Lottie Hoffman	Sacramento	Pearl and water-color paintings, and colored silk embroidery	Special—Napkin ring.
Miss H. McCormack	Sacramento	Greatest variety crochet work	First—Napkin ring.
Mrs. L. Senter	Sacramento	Night yoke	Honorable mention.
Miss Sarah Gilbert	Sacramento	Corn-husk riding cap	Honorable mention.
Mrs. J. C. Rodgers	Sacramento	Corn-husk riding cap	Honorable mention.
Mrs. M. H. Herbert	Carson City	Bead toilet cushion and mat	First—$3
Miss H. M. Brooks	Sacramento	Waxwork pond lilies	First—Fruit knife.
Mrs. J. Dunn	Sacramento	Wax bouquet	Honorable mention.
Mrs. J. S. Johnson	San Francisco.	Carriage afghan	Special—Napkin ring.
Women's Co-operative Union	San Francisco.	Largest and best display of children's and ladies' clothing	First—Diploma.
Cal. Shirt Manufactory, L. Elkus, agent	San Francisco.	Best factory-made white shirts and flannel underwear	First—Diploma.
Pioneer Paper Mills.	San Francisco.	White and colored printing paper and Manilla paper	First—Diploma.
San Lorenzo Mills, S. P. Taylor, ag't.	San Francisco.	Straw wrapping paper	First—Diploma.
Meussdorffer & Co	Sacramento	Display of hats	First—$3
Meussdorffer & Co	Sacramento	Display of silk hats	First—$2
Meussdorffer & Co	Sacramento	Display of soft hats	First—$2
H. Liebes & Co	San Francisco.	Display of furs	First class silver medal.
T. R. Johnson	San Francisco.	Display of regalia	First—Diploma.
Mrs. J. L. Hummel.	Sacramento	Masonic regalia	Special—Diploma.
F. L. Cushing	Sacramento	One set single harness	First—Diploma.
M. M. Cook & Son	San Francisco.	Exhibit leather belting, leather hose, and heavy horse collars	First—Diploma.
H. S. Crocker & Co.	Sacramento	Printing	Honorable mention.
W. M. Sharp	Sacramento	Display carpets	Honorable mention.
Pacific Tannery and Boot and Shoe Co.	San Francisco.	Display leather	Fir t—Diploma.
Pacific Tannery and Boot and Shoe Co.	San Francisco.	Pair dress boots	First—Diploma.
Shepherd & Carroll	San Francisco.	California-made lasts	First—Diploma.
Wentworth, Hobart & Co	San Francisco.	Heavy boots, bootees, gents' dress shoes and Congress gaiters	First—Diploma.
L. Price.	San Francisco.	Ladies' gaiters	First—$1
L. Price.	San Francisco.	Ladies' slippers	First—$1
Miss Lillie Hamilton	Sacramento	Patchwork quilt	First—$3
Mrs. E. H. Brown	Sacramento	Patchwork quilt	Honorable mention.
Miss M. Ormsby	Sacramento	Worsted embroidered picture	Honorable mention.
Mrs. A. D. Whitney.	Sacramento	Medley picture	Honorable mention.
Mrs. G. O. Perry	Sacramento	Cone work	First—$3
Mrs. R. J. Merkley.	Sacramento	Feather wreath	Honorable mention.
Mrs. W. H. Hobby	Sacramento	Hair rouquett	First—Napkin ring.
Mrs. M. E. Gerrish	San Francisco.	Best waxwork	First—Silver medal.
Mrs. J. L. Sturtevant	Placerville	Wax cross	Special—Fruit knife.
Clara A. Bartlett	San Francisco.	Side-saddle	First—$3
H. M. Heineman	San Francisco.	Display of neckties	First—Diploma

TEXTILE AND MILL FABRICS—Continued.

Exhibitor.	Residence.	Article.	Premium.
Domestic Carpet Factory	San Francisco.	Rag carpet	First—Diploma.
R. Ireland	Sacramento	Brooms, brushes, broom corn, etc	First—$3
Frank G. Edwards	San Francisco.	Wall paper	First—Diploma.
W. Englander	San Francisco.	Silk tassels, fringe, etc	Honorable mention.
Dewey & Co	San Francisco.	Printing	Honorable mention.

FOURTH DEPARTMENT.

MISCELLANEOUS.

Exhibitor.	Residence.	Article.	Premium.
V. S. W. Parkhurst	San Francisco.	Thief detecting money drawer and U. S. combination locks	First—Diploma.
J. A. Hoffman	San Francisco.	Patent shutter holder	First—Diploma.
C. E. Flemming & Co	San Francisco.	Landscape rock and polishing powder	Diploma.
B. Dennery	Sacramento	Display of China and Bohemian ware	First—Diploma.
J. Mallon	San Francisco.	Samples cut glass	Diploma.
I. L. Merrill	Sacramento	Display of lamps	Diploma.
H. T. Hudson	San Francisco.	Variety of stencil work	Honorable mention.
Whittier, Fuller & Co	San Francisco.	Samples glue	First—Diploma.
Pacific Saw Co	San Francisco.	Best circular, mill, hand and other saws	Silver medal.
N. W. Spaulding	San Francisco.	Patent inserted teeth for circular saws	First—Diploma.
I. F. Street	San José	Stencil work	Honorable mention.
H. N. Cook	San Francisco.	Artificial leg	Diploma.
J. N. Seeley	San Francisco.	Cake mixer, lamp-cleaner, and egg-cooker	Honorable mention.
Dr. A. Follean	San Francisco.	Trusses and surgical implements	First—Diploma.
Geo. T. Casebolt	San Francisco.	Coach lamps, etc	Diploma.
Thos. O'Neill	San Francisco.	Cut glass	Diploma.
Thos. O'Neill	San Francisco.	Stained glass	Diploma recommended.
H. Knox	San Francisco.	Harness paste, and sheep-dipping composition	Honorable mention.
H. Knox	San Francisco.	Prussian blue	First—$1
Carlton Newman	San Francisco.	Best California glass ware	Silver medal.
R. C. Terry & Co	Sacramento	Display of kitchen utensils	First—$5
R. C. Terry & Co	Sacramento	Display of tin ware	First—$3
R. C. Terry & Co	Sacramento	Cooking range	First—$5
I. L. Merrill	Sacramento	Quartz mill lantern	Honorable mention.
W. A. Sublett	San Francisco.	Ball supporter for windows	First—Diploma.
Serwais Tonnar	San José	Grafting wax	Honorable mention.
Serwais Tonnar	San José	Pruning and grafting saw	First—$3
A. Menke	Sacramento	Willow ware	First—Diploma.
O. A. Olmstead	Sonoma	California mineral paint	Special—Diploma.
O. A. Olmstead	Sonoma	California polishing powder	Special—Diploma.
Pacific Plate Works	San Francisco.	Best California plated ware	Special—Silver medal.
Liddle & Kaeding	San Francisco.	Best California made fire-arms	Special—Silver medal.

MISCELLANEOUS—Continued.

Exhibitor.	Residence.	Article.	Premium.
T. Primrose	Sacramento	Economical stove hook	Honorable mention.
W. H. Jessup & Co.	San Francisco.	California made matches	First—Diploma.
Dr. T. C. Jessup	San Francisco.	Operative dentistry	First—Diploma.
I. L. Merrill	Sacramento	Lard oil	First—$1
I. L. Merrill	Sacramento	Lubricating oil	First—$3
I. L. Merrill	Sacramento	Coal oil stove	Honorable mention.
F. T. Houghton	San Francisco.	Petroleum stoves	Honorable mention.
Holbrook, Merrill & Co.	Sacramento	Fruit cans	Honorable mention.
Holbrook, Merrill & Co.	Sacramento	Copper work	First—Diploma.
Pacific Concrete Co.	San Francisco.	Concrete pipe and roofing	First—Diploma.
Flint, Peabody & Co	San Francisco.	Best California cooperage	First—Diploma.
Standard Soap Co	San Francisco.	California soaps	First—Diploma.
A. M. Dennen	Folsom	Vegetable liniment	Honorable mention.
American Saw Co	San Francisco.	Best display perforated saws	Diploma.
American Saw Co	San Francisco.	Saw gummer	Honorable mention.
Gillig, Mott & Co	Sacramento	California tin ware	Honorable mention.
Dr. Farno	San Francisco.	Self-lighting gas burners	Honorable mention.
A. D. Oakley	Sacramento	Indelible ink	Honorable mention.
A. D. Oakley	Sacramento	Stencil goods	Honorable mention.
F. Woodward	Sacramento	Smoke stack and spark arrester	Honorable mention.
Elam & Howes	San Francisco.	Best California wooden ware	Silver medal.
Benicia Cement Co	Solano Co	Hydraulic cement	First—$3
E. S. Holden	Stockton	Yeast powders	Honorable mention.
H. Eitel	San Francisco.	Roaper's repeating shot-gun	Honorable mention.
Thos. Donnolly & Co	San Francisco.	Yeast powder	First—Diploma.
San Fran. Candle Co	San Francisco.	California made candles	First—Diploma.
M. Fulda & Son	San Francisco.	Best wine casks	Framed Diploma.
Jno. Martell	San Francisco.	Silver plated coach and carriage hardware	First—Diploma.
W. H. De Valin	Sacramento	Barrow wheels	Honorable mention.
W. H. De Valin	Sacramento	Water and steam cock	Honorable mention.
N. Clark & Co	Sacramento	Pottery	Diploma.
N. Clark & Co	Sacramento	Display stone ware	First—$3
N. Clark & Co	Sacramento	Fire bricks	First—$3
N. Clark & Co	Sacramento	Potters' clay	First—$2
J. B. Parsons	San Francisco.	Bowman's American washing fluid	Diploma recommended.
E. Philip	Sacram'to Co.	Miniature stove	Honorable mention.
W. M. Boyd	San Francisco.	Yeast powders	Honorable mention.
North Amer. Wood Preserving Co	San Francisco.	Best mode of preserving woods	Diploma.
Isaac Morgan	San Francisco.	California cement for mending crockery, etc	Special—Diploma.
H. Wachhorst	Sacramento	Best display of silver ware	Special—Diploma.
I. A. Plummer & Co.	San Francisco.	Pork packing salt	First—Diploma.
Levey & Haley	San Francisco.	Fire extinguishers	Special premium.
Cal. Powder Works, (Adams, McNeill & Co., Ag'ts)	Sacramento	California made fuse and powder	First—Diploma.
Pacific Quartz Roofing Co	Sacramento	Quartz roofing	Honorable mention.
G. McCoy	Contra Costa	Improved gate fastening	Honorable mention.
Pettit & Co	San Francisco.	Axle grease	Honorable mention.
Pettit & Co	San Francisco.	Lubricating oil	Honorable mention.
Cal. Wire Works	San Francisco.	Best manufactured wire goods	Silver medal.
B. F. Barton & Co	San Francisco.	Table salt	First—Diploma.
B. F. Barton & Co	San Francisco.	Soda, cream tartar and yeast powders	Honorable mention.
Henry Lake	San Francisco.	Boot blacking	First—Diploma.
Henry Lake	San Francisco.	Salad oil	First—Diploma.
Dr. J. B. Beers	San Francisco.	Corrugated copper plates for quartz mining	Honorable mention.
J. W. Pierce	Suisun	Best inclined elevator	Diploma recommended.
A. A. Schaeben	San Francisco.	Revolving stove-pipe joint	Honorable mention.

MISCELLANEOUS—Continued.

Exhibitor.	Residence.	Article.	Premium.
Joshua Gray	San Francisco.	Plated, annealed and piano string wire, and drawn solder	Special—Diploma.
Hucks & Lambert	San Francisco.	Axle grease	First—Diploma.
Lemdberg & Marwedel	San Francisco.	Telegraph instruments	Honorable mention.
Gillig, Mott & Co	Sacramento	Cooking stove ; its economy in the use of wood	First—$5
C. G. Kelley & Co	San Francisco.	Washing fluid	Diploma.
Conrad Cluich	Folsom	Vine pruner	Honorable mention.
A. C. Taylor	San Francisco.	Kitchen sink and self-cleaning slop hopper	Special.
A. C. Taylor	San Francisco.	Portable cooking range and kitchen piano	Honorable mention.
Gillig, Mott & Co	Sacramento	Danford's lamps	Honorable mention.
Bay View Chemical Works	San Francisco.	Sal soda	First—Diploma.
C. B. Chadwick	San Francisco.	Dr. Field's composition stone roofing	Special—Diploma.
Eureka Hair Co	San Francisco.	Display California Eureka hair	Diploma recommended.
Wigmore & Palmer	San Francisco.	School furniture	First—Diploma.
Strahle & Hughes	San Francisco.	Billiard table and floor	Silver medal.
Pac. Elastic Sponge Company	San Francisco.	Best material for mattresses	First—Diploma.
s	San Francisco.	Carved walnut picture frame	First—Diploma.
	San Francisco.	Carved and gilded picture frames	First—Diploma.
	San Francisco.	Morocco library set and set bridal chairs	Diploma recommended.
Goodwin & Co	San Francisco.	Office chairs	First—$2
Goodwin & Co	San Francisco.	Sick chairs	First—$3
F. T. McAuliff	San Francisco.	Stained, polished, grained and varnished California woods	Diploma recommended.
J. D. Boyd	San Francisco.	Plain and polished California laurel wood and laurel veneering	Diploma recommended.
N. P. Cole & Co	San Francisco.	Display furniture	First—$10
N. P. Cole & Co	San Francisco.	Sofa	First—$5
N. P. Cole & Co	San Francisco.	Extension table	First—$3
N. P. Cole & Co	San Francisco.	Set parlor chairs	First—$5
N. P. Cole & Co	San Francisco.	Centre table	First—$5
N. P. Cole & Co	San Francisco.	Parlor furniture	First—$10
N. P. Cole & Co	San Francisco.	Wardrobe	First—$3
Jno. Deuden	Happy Valley	Amateur carving	Honorable mention.
Serwais Tonnar	San José	Rustic chair and garden seat	First—$3
Am. Spring Bed Co.	San Francisco.	Best elastic bed slats and rubber springs combined	Diploma recommended.
George A. Brush	San Francisco.	Oak, walnut and rosewood graining	Special—Diploma.
Mrs. M. S. Reed	San Francisco.	Shoulder braces, abdominal supporters and busts	Special.

WINES, ETC.

Exhibitor.	Residence.	Article.	Premium.
J. Landsberger	San Francisco.	White still wine, four years old	First—$10
J. Landsberger	San Francisco.	White still wine, four years old	Special.
P. Schaub	Butte Co	Still white wines, three years old	First—$10
C. Detten	Stockton	White still wine, three years old	Special.
C. Heinrich	Yolo	White still wine, two years old	First—$10
J. G. Gould	Placer Co	White still wine, two years old	Special.
Theibend Schaub	Butte Co	White still wine, one year old	First—$10
J. Landsberger	San Francisco.	White still wine, one year old	Special.
B. D. Wilson	Los Angeles	Sultana wine, two years old	First—$10
J. R. Snyder	Sonoma	Red wine, four years old	First—$10
B. N. Bugbey	Folsom	Superior wine, three years old, made from Italian and Burgundy	First—$10
B. N. Bugbey	Folsom	Wine from Malaga and Muscat grapes	First—$10
B. N. Bugbey	Folsom	Wines from Black Malaga	Special.
J. Landsberger	San Francisco.	Red wine, two years old	First—$10
Craig	Sonoma Co	Burgundy wine, one year old	First—$10
Eberhardt & Lachman	Los Angeles	Sparkling wine	First—$10
Eberhardt & Lachman	Los Angeles	Angelica wine	First—$10
B. D. Wilson	Los Angeles	Port wine, two years old	First—$10
B. D. Wilson	Los Angeles	Port wine, one year old	First—$10
Eberhardt & Lachman	Los Angeles	Superior port, nine years old	First—$10
Eberhardt & Lachman	Los Angeles	Sherry wine, two years old	First—$10
B. N. Bugbey	Folsom	Exhibit of wines from foreign grapes	First—$10
B. D. Wilson	Los Angeles	Exhibit of wines made from native grapes	First—$10
John Thoman	Sacramento	Brandy, three years old	First—$15
Eberhardt & Lachman	Los Angeles	Brandy, four years old	First.
B. N. Bugbey	Folsom	Brandy, two years old,	First—$10
C. Heinrich	Yolo	Brandy, two years old	Special.
Eberhardt & Lachman	Los Angeles	Brandy, six years old	Special.
John Thoman	Sacramento	Pure wine brandy	Special.
John Thoman	Sacramento	Pure spirits	Special.

BITTERS, ETC.

Exhibitor.	Residence.	Article.	Premium.
Dr. W. Henley	San Francisco.	I X L grape root bitters	First—Diploma.
Wertheimber & Waterman	San Francisco.	Boonekamp of Maag bitters	Special—Diploma.
Wertheimber & Waterman	San Francisco.	Tonic—Splendid	Special recommended.
Wertheimber & Waterman	San Francisco.	Jamaica ginger	Special recommended.
McMillan & Kester	San Francisco.	Cocktail bitters	Special—Diploma.
McMillan & Kester	San Francisco.	Syrups	Special—Diploma.
McMillan & Kester	San Francisco.	Cordials	Special—Diploma.
McMillan & Kester	San Francisco.	Ginger wine	Special—Diploma.
McMillan & Kester	San Francisco.	Essence peppermint	Special—Diploma.
A. Bona	San Francisco.	Squarza's punch	Diploma.

FIFTH DEPARTMENT.

VEGETABLES, ROOTS, SEEDS, ETC.

Exhibitor.	Residence.	Article.	Premium.
P. H. Murphy	Sacramento	Display of pumpkins	First—$3
George E. Cogghall.	Sacramento	Display of squashes	First—$4
George E. Cogghall.	Sacramento	Six Hubbard squashes	First—$2
D. L. Perkins	Oakland	One dozen green sweet corn	First—$2
D. L. Perkins	Oakland	Best collection of garden seeds	$20
Robert Williamson	Sacram'to Co.	Display of sweet corn	First—$3
A. B. Gilbert	Sacram'to Co.	Display of white and yellow dent corn	Special—$2
E. F. Aiken	Sacramento	Pop corn	Special notice.
G. E. Cogghall	Sacram'to Co.	Three mountain sweet watermelons	First—$2
N. Mills	Sonoma Co.	Goodrich potatoes	First—$5
W. Fern	Sacram'to Co.	English fluke potatoes	First—$5
W. Fern	Sacram'to Co.	Best crop alfalfa, two acres	$15
Robert Williamson	Sacramento	Largest variety of potatoes	First—$5
Robert Williamson	Sacramento	Half bushel Carolina sweet potatoes	First—$5
T. Edwards	Sacramento	Samples carrots, from two acres	First—$2
T. Edwards	Sacramento	Best crop of carrots, three acres	$15
Robert Williamson	Sacramento	Sugar beet	First—$2
R. J. Merkley		Best ten acres of hops	$25
George E. Cogghall.	Sacramento	Tomatoes	First—$3
E. Parsons	Sacramento	White tomatoes	Special—$2
W. Fern	Sacram'to Co.	Three green-fleshed muskmelons	First—$2
G. E. Cogghall	Sacram'to Co.	Display of melons	First—$5
J. W. Neff	Sacram'to Co.	Half dozen cucumbers	First—$1
E. F. Aiken	Sacram'to Co.	Half peck castor beans	First—$4
G. E. Cogghall	Sacramento	Variety of vegetables	First—$15
Mrs. A. S. Greenlaw	Sacramento	Specimen of the flower coxcomb	Honorable mention.
Robert Williamson	Sacram'to Co.	Half peck peanuts	First—$2
B. C. Horn & Co.	San Francisco.	California made cigars and tobacco	First—Diploma.
R. G. Gellin	San Francisco.	California cigars and tobacco, made and put up in style, by females	Special—Diploma.
Miss C. A. Burnes	Sacram'to Co.	Twenty-five pounds June butter	First—$15
Mrs. D. R. Hunt	Sacram'to Co.	Ten pounds butter, in rolls	First—$10
Mrs. E. F. Aiken	Sacram'to Co.	Butter, in rolls	Honorable mention.
M. S. King	Sacramento	Largest and best variety of canned fruits	First—Diploma.
Charles Bernard	San Francisco.	Ground spices, coffee and prepared California mustard	Diploma.
Ravenna, Chirardelli & Co.	San Francisco.	Samples of cooking pastes	First—Diploma.
Miss Eliza	Sacramento	Loaf bread	First—$2

SILK BUSINESS.

Exhibitor.	Residence.	Article.	Premium.
L. Prevost	San José	Exhibition of the silk business from mulberry tree to the cocoon; including feeding of worms, their eggs, etc	First—$50
Miss L. Sauffrignon.	San José	Bouquet cocoons	Honorable mention.
Mrs. W. Erkins	San José	Lot cocoons	Honorable mention.
Dr. D. C. Franklin	Los Angeles	Lot cocoons	Honorable mention.
Mrs. J. Sauffrignon.	San José	Bouquet and wreath cocoons	Honorable mention.
Mrs. Alice Boston	Santa Cruz	Lot cocoons	Honorable mention.
J. Smith	Sacramento	Cocoons and mulberry trees	Honorable mention.
J. Rice	Yuba Co	Variety cocoons	Honorable mention.
Don José Olivia	Hornitas	Variety cocoons	Honorable mention.
G. E. Gonx	Santa Barbara.	Variety cocoons from 100,000	Honorable mention.
T. A. Garey	Los Angeles	Variety cocoons and bouquet	Honorable mention.
A. Brewster	San Gabriel	Variety cocoons	Honorable mention.
A. Packard	Santa Barbara.	Variety cocoons from 100,000	Honorable mention.
M. A Goddard	Sacramento	Samples Japanese cocoons	Honorable mention.
Mrs. L. Sellers	Antioch	Lot cocoons	Honorable mention.
Muller & Isoard	Nevada City	Lot cocoons	Honorable mention.
B. S. Wilson	Santa Clara	Lot cocoons	Honorable mention.
A. F. Goddard	Sacramento	Lot Japanese cocoons	Honorable mention.
A. F. Goddard	Sacramento	Lot mulberry trees	Honorable mention.
L. Hess	Placerville	Lot Japanese cocoons	Honorable mention.
Dr. D. W. Koehler	Oregon	Lot cocoons, first raised in that State.	Honorable mention.
Geo. Reed	Snelling	Lot cocoons	Honorable mention.
Mrs. L. Waldron	Sacramento	Lot cocoons	Honorable mention.
Mrs. W. Flint and Mrs. M. Jennings.	Sacramento	Lot Japanese cocoons	Honorable mention.
Mrs. W. Flint and Mrs. M. Jennings.	Sacramento	Lot Turkish cocoons	Honorable mention.
Mrs. W. Flint and Mrs. M. Jennings.	Sacramento	Lot European cocoons, both in cases and in the bush	Honorable mention.
C. W. Reed	Yolo	Lot morus multicaulis	Honorable mention.
J. S. Harbison	Sacramento	Lot meretti multicaulis	Honorable mention.
Robt. Williamson	Sacramento	Mulberry trees	Honorable mention.
W. M. Haynie	Sacramento	Lot cocoons from 700,000	Honorable mention.
W. M. Haynie	Sacramento	Japanese silk worms feeding	Honorable mention.
W. M. Haynie	Sacramento	Four cartoons of eggs prepared for European market	Honorable mention.
W. M. Haynie	Sacramento	Mulberry trees	Honorable mention.
I. N. Hoag	Sacramento	Japanese eggs	Honorable mention.
I. N. Hoag	Sacramento	European eggs	Honorable mention.
I. N. Hoag	Sacramento	Turkish eggs	Honorable mention.
I. N. Hoag	Sacramento	Skeins of reeled silk, etc	Honorable mention.

PRESERVES, PICKLES, ETC.

Exhibitor.	Residence.	Article.	Premium.
A. Bergman	Sacramento	Walnut catsup	Special—$2
Mrs. J. P. Odbert	Sacramento	Pickled peaches	First—$3
Mrs. R. L. Robertson	Sacramento	Pickled mangoes	First—$3
Mrs. D. Kendall	Sacramento	Preserved peaches	First—$3
Mrs. R. L. Robertson	Sacramento	Apple jelly	First—$3
Mrs. D. Kendall	Sacramento	Preserved quinces	First—$3
Mrs. J. P. Odbert	Sacramento	Currant jelly	First—$3
A. Bergman	Sacramento	Pickled tomatoes	First—$3
Mrs. J. P. Odbert	Sacramento	Quince jelly	First—$3
Mrs. J. P. Odbert	Sacramento	Peach jelly	First—$3
J. S. Harbison	Sacramento	Honey	First—$5
A. Hummel	Sacramento	Pickled gherkins	First—$3
A. Bergman	Sacramento	Pickled onions	First—$3
Mrs. J. P. Odbert	Sacramento	Tomato catsup	First—$3
A. Bergman	Sacramento	Pickled cucumbers	First—$3
M. S. King	Sacramento	Canned peaches	First—$3
M. S. King	Sacramento	Canned pears	First—$3
A. Bergman	Sacramento	Canned tomatoes	First—$3
M. S. King	Sacramento	Canned blackberries	First—$3
M. S. King	Sacramento	Canned cherries	First—$3

FLOUR, ETC.

Exhibitor.	Residence.	Article.	Premium.
Colusa Flour Mills, by L. F. Reed	Sacramento	Barrel flour, "bakers' extra"	First—Diploma and $15
Eagle Mills	Knight's Lan.	Fifty pounds extra family flour	Special.
Pioneer Mills, Eisen Bros.	San Francisco.	Samples of corn, rye and oat meal, hominy, pearl barley, rye, rice and buckwheat flour, farina, split peas, hulled and cracked corn, buckwheat and oat groats	Diploma.
Wm. B. Gibson	Yolo Co	Best two bushels of Chile wheat, 63½ pounds per bushel	First—$10
Wm. B. Gibson	Yolo Co	Best two bushels of club wheat, 62½ pounds per bushel	First—$10

HOPS.

Exhibitor.	Residence.	Article.	Premium.
Wm. M. Haynie	Sacramento	Best hops and hop kiln	First—Diploma.
J. L. Clark	Sacram'to Co.	Sample hops	Special.
M. L. Waldrum	Sacramento	Bale as sample hops	Honorable mention.

SIXTH DEPARTMENT.

FRUITS, DRIED FRUITS, ETC.

Exhibitor.	Residence.	Article.	Premium.
A. S. Greenlaw.	Sacramento	Twenty varieties apples, best grown and named	First—$15
C. W. Reed	Yolo	Twenty varieties pears, best specimens and correctly named, three specimens each	First—$10
I. S. Bamber	El Dorado	One variety peaches, 12 specimens	First—$2
I. S. Bamber	El Dorado	One variety plums, 12 specimens	First—$3
I. S. Bamber	El Dorado	One variety nectarines, 12 specimens	First—$3
C. W. Reed	Yolo	One dozen quinces	First—$5
Jno. Thoman	Sacramento	Collection native grapes	First—$10
Jno. Thoman	Sacramento	One variety, six bunches	First—$3
B. N. Bugbey	Folsom	Collection foreign grapes	First—$10
B. N. Bugbey	Folsom	One variety grapes for dessert or table use, for raisins and wine	First—$5
C. W. Hoit	Sacramento	One variety figs, twelve specimens	First—$3
T. K. Stewart	Sacramento	Olives and oranges	Special—$3
E. Pieree	Sacramento	Collection of nuts	Special—$2
Mrs. E. L. Aiken	Sacramento	Greatest number of varieties dried fruits and best specimens, not less than three pounds each	First—$25
B. N. Bugbey	Folsom	Twenty-four pounds raisins	First—$15
C. S. Lowell	Sacramento	Three varieties grapes	Special—$2
Mrs. C. Crocker	Sacramento	Quince and pomegranate	Special—Napkin ring.
Mrs. W. W. Marvin.	Sacramento	Pomegranates	Special—Napkin ring.
L. S. Graham	Sacramento	Peaches	Special—$2
J. S. Harbison	Sacramento	Display pears and apples	Special—$2
Mrs. W. N. Brooks.	Yolo	Collection of fruits	Special—$2
J. Runyon	Sacramento	Collection fruits	Special—$2
T. Milgate	Sacramento	Dried fruits	Special—$2
Mrs. R. H. Wick	Sacramento	Collection dried fruits	Special—Napkin ring.
Henry Bush		Fruit drying house	Special—$2

SEVENTH DEPARTMENT.

PAINTINGS, DRAWINGS, ETC.

Exhibitor.	Residence.	Article.	Premium.
W. L. Marple	San Francisco.	Oil painting	$20
Norton Bush.	San Francisco.	Oil painting	$20
W. L. Marple	San Francisco.	Landscape oil painting	$10
Norton Bush	San Francisco.	Landscape oil painting	$10
Colonel Warren	San Francisco.	Collection of lithographs and engravings	Diploma.
Mrs. W. E. Brown	Sacramento	Flower painting	First—$10
Otto Schrader	San Francisco.	Fruit painting	First—$10
Mrs. G. D. Stewart	Sacramento	Crayon drawing	Diploma.
J. B. Grouppe	San Francisco.	Wood engraving	Diploma.
Joseph F. Hess	San Francisco.	Pencil drawing	Diploma.
Mrs. G. D. Stewart	Sacramento	Water color painting	First—$20
F. Serregni	San Francisco.	Penmanship and pen drawing	First—Diploma and $5
J. W. Cherry	San Francisco.	Sign painting	First—Diploma.
Wm. Shew	San Francisco.	Plain photograph, life size	First—$15
Wm. Shew	San Francisco.	Photograph in water color	First—$15
Wm. Shew	San Francisco.	Photograph in India ink.	First—$10
Wm. Shew	San Francisco.	Plain sun pearl	First—$15
Wm. Shew	San Francisco.	Porcelain picture, colored	First—$10
Silas Selleck.	San Francisco.	Plain photograph, medium size	First—$10
C. E. Watkins	San Francisco.	Landscape photograph (collection)	Special—$10
Thos. Houseworth	San Francisco.	Collection of landscape photographs.	Special—$10

SCULPTURE.

Exhibitor.	Residence.	Article.	Premium.
P. J. Devine	San Francisco.	Sculpture—A child's bust	First—$10
J. C. Devine	Sacramento	Collection of marble work	First—$30
Jos. Dunkerley	San Francisco.	Collection of prepared birds	First and diploma—$15
P. Mezzura	San Francisco.	Collection of medallions	Special—$10

MUSICAL INSTRUMENTS.

Exhibitor.	Residence.	Article.	Premium.
L. K. Hammer	Sacramento	Grand Chickering piano	First—$20
L. K. Hammer	Sacramento	Square Chickering piano	First—$20
L. K. Hammer	Sacramento	Violin	First.
L. K. Hammer	Sacramento	Flute	First—$5
L. K. Hammer	Sacramento	Clarinet	First—$5
Kohler, Chase & Co.	San Francisco.	Mason & Hamlin's organ	First—$10
Kohler, Chase & Co.	San Francisco.	Mason & Hamlin's melodeon	First—$5
L. P. McCarthy	San Francisco.	Musical chromatic map	First—Diploma.

NOTEWORTHY EXHIBITIONS.

Under this heading we make brief mention of such displays in the Pavilion as from their nature or workmanship merit a careful scrutiny; but we do not wish to have the inference drawn that a failure to specially notice implies lack of merit in any particular exhibition.

The Mission Woollen Mills, of San Francisco, Lazard Freres, agent, had a fine display of blankets, from the rough but useful miners' blanket, to the soft and silky covering that adorns the luxurious coach, and a large variety of tweeds, cassimeres and beavers; besides ladies' cloakings and flannels of the finest texture, and buggy robes and sluice blanketings. These mills were represented in the Exposition Universalle at Paris, where they were awarded a gold medal. We are told that they now employ three hundred men, and have fifty looms, six thousand spindles, and eleven sets of cards in operation. The goods they manufacture are a credit to our State.

Dr. A. Folleau, of San Francisco, anatomical machinist, exhibited a case of artificial limbs and apparatus for human deformities, which attracted considerable attention from surgeons and physicians. Among the apparatus exhibited by him, are some for lateral curvature of the spine, for hip joint diseases, for club feet, for contraction of the muscles of the neck, and for deformities of the neck (torticoli). He also had a collection of trusses for inguinal, femoral, scrotal and umbilical diseases. The whole of the exhibition was manufactured in the City of San Francisco by the exhibitor, and many of the most meritorious particulars are the production of his inventive faculties. His artificial legs can be manufactured at the same price as those made in Philadelphia, and combine lightness with all necessary solidity

Liddle & Kaeding, of San Francisco, exhibited a collection of revolvers, guns, rifles, pistols, etc., and what they claim to be the first breech-loading gun ever made on the Pacific coast. They also exhibited a double-barrelled shot-gun, with a California laurel stock, and mounted with Washoe silver—the first time laurel was ever used for the purpose. They also had a large variety of sporting goods and fishing tackle.

Joseph Dunkerly, taxidermist, who has taken up his residence in Sacramento, exhibited a fine collection of stuffed foreign and domestic birds.

H. Liebes & Co., of San Francisco, made a magnificent display of furs, comprising cloaks, capes, muffs, sacks and collars, made of Hudson Bay and Russian sable, mink, ermine, fitch, gray and black Astrachan and Siberian squirrel; fur-seal sacks, trimmed with ermine and fitch; Queen's pigeon capes and muffs, and black and white Cashmere goat and swan skins. A large snake coiling around a stuffed tiger attracted attention to their stand. This collection of furs was really very fine, and deserved careful examination.

N. P. Cole & Co., of San Francisco, exhibited a splendid display of furniture, including a laurel wood bedroom set of nine pieces, the bureau, table, etc., of which is topped with Italian statuary marble; also, a laurel parlor set of seven pieces, covered with blue silk reps. These are

of California wood and California manufacture. They also exhibited a double parlor pressed rosewood set of eight pieces, covered with French crimson and gold courtelaines; and a rosewood chamber set, with raised panels of ash roots and motley marble tops, with wardrobe to match; and a splendid rosewood etagere. We were informed that this company are receiving many orders for laurel wood furniture, which seems to be growing rapidly in public estimation. All the sets we have mentioned are palatial in their magnificence.

A. Hummel, of Sacramento, exhibited a fine collection of pickles of various kinds, and a quantity of canned peaches.

The Benicia Cement Company showed two barrels of fine cement and brick shaped samples of the same material.

R. C. Terry, of Sacramento, had a varied assortment of kitchen ranges, stoves and kitchen furniture. In his collection was a portable soda fountain, which is charged by means of a lever projecting from the side next the operator, and a few strokes of which from time to time keeps up the required pressure. The fountain is about two feet in height, and can be carried in a common travelling trunk.

The Pacific Pottery of Sacramento exhibited specimens of its stone and earthenware and fire brick, and of clay from El Dorado County, from which putty of good quality can be made. It also showed samples of California fire brick, which is declared to be equal to the best imported, and of porcelain clay, which has been subjected to intense heat.

In one of the corners of the upper hall there was a mammoth cake, about four feet in diameter, for slices of which tickets were sold for the benefit of the Band of Hope.

F. T. McAuliff, of San Francisco, exhibited specimens of polished California laurel, black walnut and Spanish cedar. For his graining and polishing he was awarded a diploma at the late Mechanics' Institute Fair.

Detrick & Eckart, of San Francisco, exhibited in the lower hall a balanced oscillating engine—a California invention—which propels the machinery in the lower hall. The advantages claimed for this engine over other oscillators arise from the peculiar manner in which the pressure is received and delivered from the pistons. The pistons being so connected as to move to and from the center of oscillation simultaneously, under the same pressure and velocity, all strain and friction due to action of the steam (or motive power) is removed from the trunnions. As each piston separately travels through but one-half the stroke, the oscillation of the cylinder is but one-half that of the ordinary oscillating engine. In the ordinary construction of oscillating engines, the movement of the cylinder is produced by the piston rod, and in consequence the rod has to be made much larger in diameter, and the stuffing boxes and glands much deeper and stronger, and in many cases guides have had to be substituted to overcome the great friction produced by the action of steam on the trunnions, which in this engine, it is claimed, is entirely obviated. The inventors received a gold medal at the late Mechanics' Institute Fair.

Bernard Dennery, of Sacramento, displayed a choice selection of China and fancy glassware, such as vases, tea sets, etc.

In the lower hall, E. P. Hicks exhibited an ingenious and simple gate, styled John Dickinson's patent self-opening gate. In approaching the gate the wheels of one side of the vehicle press to the ground a lever, causing it, in its rotation, to throw open the gate, and after passing through, the vehicle passes over another lever, which causes the gate

to shut, the driver being relieved from raising any latches or pulling any strings, except the ribbons on his team.

In the shed adjoining the Pavillion, J. W. Pearce, of Suisun, Solano County, exhibited a patent incline elevator (a California invention) for running coal and quartz on an incline, the peculiarity of which consists in its having an upper and lower track. At the dump, while the two forward wheels pass down the incline, the two hind wheels pass up on the upper track and the car is upset by gravitation.

In the lower hall, M. S. King, of Sacramento, had a fine lot of canned berries, peaches, tomatoes, plums, pears and apricots, etc.

The Pacific Elastic Sponge Company, of San Francisco, exhibited pillows, bolsters and mattresses stuffed with elastic sponge. This material is claimed to have the elasticity, durability and softness of curled hair, while at the same time it is cleaner and cheaper. The merits of this material are claimed to be its superior and permanent elasticity, its unrivalled cleanliness, its extreme durability, the comparative ease and cheapness with which it can be manufactured into any articles of upholstery, and the fact that the same weight of sponge goes further in manufacture than any other known material.

The San Francisco Glass Works, the factory of which was unfortunately burned down recently, but which, it is expected, will soon again be in active operation, exhibited a fine collection of prescription vials, from the half drachm vial to the ten gallon carboy, and a fine lot of bottles, lamp chimneys and glass work generally. C. Newman, of this establishment, exhibited his patent glass melting-pot, which, from its peculiar arrangement, melts glass in from twelve to fifteen hours—a shorter time than the ordinary covered pot does, and from the intense heat generated by the introduction of fresh oxygen at a certain point, admits of the making of good glass with salt cake (the refuse of acid works) and dispenses with the use of soda ash.

Wigmore & Palmer, of San Francisco, exhibited in the lower hall a number of school desks, teachers' desks, chairs and settees, manufactured in California from oak, maple, cherry and mahogany. We are informed that they have manufactured and sold one thousand three hundred desks and chairs since last May.

T. Rodgers Johnson, of San Francisco, exhibited a fine case of Odd Fellows', Masons' and Good Templars' regalia, besides epaulets, shoulder straps and ornaments for military caps.

Gillig, Mott & Co., of Sacramento, in the upper hall, had quite a collection of Danford lamps, the brilliancy of the light afforded by which was a subject of general comment. They also had lamp shades of different varieties and patterns.

Shepherd & Carroll, of San Francisco, showed a few of their well shaped and well made lasts, of various sizes.

J. L. F. Warren, of the *California Farmer*, exhibited several cases of natural and other curiosities, such as various specimens of wool, cocoons and silk; the first box of raisins, the first piece of rosin, the first sample of sugar and the first walnuts grown in California. He also showed a collection of modern and ancient coins, and many objects of interest too numerous to particularize.

W. L. Marple, of San Francisco, exhibited the finest pictures in the art gallery—comprising views of the Golden Gate, of Cascade Lake, the Summit from near Hawley's, Lake Valley, and two views on Napa

Creek. As at the Mechanics' Institute Fair, these paintings were constantly surrounded by admiring groups of visitors, and elicited high eulogiums from those who claim to be art connoisseurs. No lover of art failed to examine carefully these very meritorious productions

Thomas Houseworth & Co., of San Francisco, displayed photographic views of numerous localities and natural curiosities of the Pacific coast. Their collection was varied and interesting.

William Shew, of San Francisco, occupied a large space in the picture gallery with ivorytypes, sun pearls, cabinet and card photographs, and other choice productions of the daguerrian art, including portraits of many distinguished persons.

Silas Selleck, of San Francisco, also exhibited cabinet portraits, and plain and retouched photographs.

Norton Bush, of San Francisco, exhibited his fine series of paintings of the gorgeous tropical scenery of the Isthmus of Darien, including a view of Panama. Aside from their high artistic merits, they are interesting from the associations they recall in the minds of a large proportion of the visitors. He also exhibited "Mount Diablo," from nature.

Mrs. C. Cook, of San Francisco, showed a case of beautiful hair jewelry, comprising bracelets, ear-rings, finger-rings, breastpins, etc. This collection was especially admired by lady visitors.

P. Mezzara, of San Francisco, contributed some of his exquisitely cut cameos and some very fine busts. This gentleman has his studio at Bradley & Rulofson's photographic gallery, San Francisco. As our State advances in the fine arts the productions of his genius are growing more and more in public estimation.

Mrs. G. D. Stewart, of Sacramento, exhibited three fine crayon sketches, entitled "The Bridge of Toledo," "Apollo," and "The Windmill." She also exhibited three pictures of Scottish scenery in water colors. These pictures are from nature, were executed in earlier years, and embarrassed circumstances induces the lady artist to offer them for sale.

C. E. Watkins, of San Francisco, landscape photographer, exhibited in the gallery a large number of very fine views of scenes upon the Columbia River, and of many of the most beautiful landscapes and interesting natural curiosities of California and Oregon, including very large sized photographs of Portland and Oregon City. These views are executed in the highest style of the photographic art.

Serwais Tonnar, of San José, exhibited a rustic settee of heart maple, buckeye and redwood; and a rustic chair of the same woods, ornamented with shells. He also showed specimens of grafting wax—his own invention—which he claims to be superior to any other in use; and a pruning saw, also his own invention, which he claims does its work better and quicker than any other saw. Practical men speak highly of these two latter articles.

William M. Haynie, of Sacramento, exhibited an improved patent hop kiln, with two bales of hops dried in the kiln. It is claimed for this kiln that it dries hops in a thorough, uniform and superior manner, in two-thirds of the time needed by the old plan. The hops are charged and discharged, and turned without the necessity of any person entering the kiln, thereby avoiding one of the most disagreeable and unhealthy features connected with hop-drying. He also exhibited four varieties of mulberry trees and sample lots of cocoons.

D. L. Perkins, of Oakland, exhibited one hundred and fifty-two varieties of choice seeds in bottles, which were intended to be sent to the

King of Prussia about the first of October. He also had on exhibtion seeds of the White Imperial variety of sugar beet, imported two years ago from Germany; twenty-four varities of seeds of this year's growth, and samples of the sixteen and twenty rows variety of sugar corn.

The Pacific Barrel and Keg Company, of San Francisco, made an exhibit of flour, pork, sugar and packing barrels and kegs. Their works are located at the Potrero, San Francisco, and their barrels and kegs promises to drive imported articles of that kind out of the market.

The American Saw Company, by W. J. Tucker, agent, San Francisco, exhibited specimens of Emerson's patent movable tooth and perforated circular mill, mulay and cross-cut saws. The advantages claimed for the movable tooth saws are, that the teeth will not fly out; that they are five times stronger than the ordinary solid saw teeth; that they will not become loose by any ordinary use, and that if they are too badly injured to swage and file up again, a new set can be inserted in a few minutes. The advantages claimed for the perforated saws are that they save filing, gumming, and cannot crack but to the first notch. These saws are well worthy the attention of mill men.

The Pacific Tannery, of San Francisco, exhibited in the upper hall various descriptions of ladies' and gentlemen's boots and shoes, from the heavy coarse shoe to the finely ornamented ladies' gaiter. As the tannery produces the necessary raw material, the goods are all fresh and free from salt water moisture. A mammoth shoe was an object of curiosity in their display.

Henry Lake, of San Francisco, exhibited numerous boxes of his Japan paste blacking, and several bottles of mustard seed oil, refined for table use, which he claims to be equal to the best French oil.

For N. Lumsden, Lake exhibited a California apparatus for making screwed boots, which does its work as well and can be furnished for one-quarter of the price of the French machine. For Lumsden & Boone, Lake exhibited a patent sail and collar needle, the peculiarity of which is that the thread is kept entirely inside the needle, so that the thread never chucks in drawing out.

J. C. Meussdorffer, of Sacramento, exhibited a case containing silk, cassimere, soft, beaver and nutria hats, of superior workmanship.

George T. Casebolt & Co., of San Francisco, exhibited in the upper hall a fine assortment of coach trimmings and coach hardware.

W. H. De Valin, of Sacramento, exhibited a patent barrow wheel made of wrought iron, which is claimed to be more durable than the ordinary wooden wheel, not being liable to shrink, and avoiding the necessity of setting tire, and his patent steam and water faucets.

Strahle & Hughes, of San Francisco, exhibited a fine laurel billiard table, inlaid with rosewood, mounted upon a flooring composed of laurel, rosewood and Oregon maple. We are informed that this table was manufactured to order for a well known citizen, at a cost of one thousand dollars.

The Pacific Concrete Company, of San Francisco, exhibited samples of their concrete material for roofs and sidewalks, etc., which is claimed to be proof against sun, heat or frost, and to be the cheapest and most durable material for the purposes for which it is designed.

Henry Bush, of San Francisco, had on exhibition Billings' patent fruit drying house. This invention claims to obviate the danger of fire or scorching the fruit, and by a constant and rapid change of air, to dry the fruit in a few hours and preserve it from insects and filth.

B. F. Cook, of Napa, the inventor, exhibited a model, or models, by

which he claims to present: First—A combined steam header and thrasher, to be hauled through the field by animal power, while the machinery is worked by steam. Second—A steam boiler, engine, thrasher and separator on the same wagon; the header being detached, so as to render the common thrasher and steam power useful when heading season is over; or the header reel and stickle may be detached, when the draper will be used to elevate the grain from the stack. The thrasher and steam power being on the same wagon, the whole machinery may be hauled forward a little at any moment to suit the pitchers. Third—A combined header and header wagon, the former being attached to the side of the latter.

Dr. Henley, of San Francisco, exhibited some fifty cases or more of the preparation invented by him, known as "Dr. Henley's Wild Grape Root I X L Bitters," compounded from the root of the Oregon wild grape and other ingredients.

J. N. Seeley & Co, of San Francisco, had on exhibition a variety of inventions calculated to save time and labor. First in order is the scientific churn, which is operated daily. It makes butter from sweet or sour milk or cream; is easily worked, simple and durable. They also had a mop wringer, egg cooker, cake mixer, lamp chimney cleaner, and last but not least, a working model of a trip-hammer, designed to work with the foot, and is easily made to strike at any point on the anvil.

A. Bona, of San Francisco, successor to the well-known Squarza, had on exhibition a fine display, consisting of a large variety of manufactured punches, cordials and bitters. There were over twenty different kinds of the first named, some of which bear fanciful names—such as Ladies' Tears, Morning Comfort, Farewell, Anti-Divorce, etc.

O. A. Olmsted, of Sonoma County, exhibited samples of mineral or rock paint, discovered by him in eighteen hundred and sixty-six, near Sebastopol, Sonoma County, while boring for water. His display consisted of nine different varieties of unmixed paint, of black, red, yellow, brown and other colors, and a few colors ground in oil. These paints are represented as suitable for painting houses, vessels, wagons, etc.

R. G. Gelien, of San Francisco, exhibited some excellent imitation of Swiss cigars made at his factory; also, a fine display of Turkish smoking tobacco in packages and in bulk. A placard announced that his cigars are made entirely by the fair hands of women.

John Thoman, of Sacramento County, contributed a variety of grapes, among which are the Gray Tokay, Royal Muscat, Isabella, Muscat of Alexandria and Damascana.

The Pioneer Flour Mills, of San Francisco, Eisen Brothers, proprietors, were represented by specimens of white farina, cracked wheat, pearl barley, hulled barley, hominy, corn meal, split peas, etc.

McMillan & Kester, of San Francisco, made a fine display of bitters, cordials, syrups, gums, cocktails, etc., including strawberry, raspberry, blackberry, sarsaparilla, orgeat and pineapple flavors.

The exhibition of native wines and brandies by B. D. Wilson & Co., of San Francisco, was extensive and creditable. The assortment comprised port, angelica, claret, white, sherry and other wines, cognac brandy, grape brandy, etc., from Lake Vineyard, near Los Angeles. The same firm are also the agents of several other vintages.

B. N. Bugbey, of Sacramento County (Natoma Vineyard), made a large display of grapes, embracing some fifteen different varieties, among which we may name the Fiber Zagos or raisin grape, Black Mus-

cat and Madeline. The same exhibition also had a fine display of California champagne, wines, grape and cognac brandy, etc.

Wertheimer & Waterman made an excellent exhibition of samples of different cordials, bitters, syrups, extracts, etc. The popular bitters known as the "Splendid" occupied a conspicuous place in the display.

P. J. Devine, of San Francisco, exhibited a beautiful bust of a young boy, chiselled from an unusually fine block of Columbia (California) marble. Latent life appeared to dwell within the cold marble, and to gaze through the eyes of the sweet-faced child into the outer world beyond. Devine has executed many fine busts of prominent citizens, living and dead, but considers this last achievement his masterpiece.

Mrs. T. J. Winship, of San Francisco, who received the first premium for millinery at the late fair in that city, exhibited a show-case containing bonnets and artificial flowers, which were much commended and admired by lady visitors, who describe them by the two words, "Perfect loves."

Mrs. M S. Read, of San Francisco, showed a case containing her improved skirt supporters and chest expanders, for expanding the chest, strengthening the lungs and stomach, and correcting the bad habit of stooping. She also exhibited abdominal supporters and gentlemen's braces and suspenders.

F. Seregni, of the Pacific Business College, exhibited in the gallery a highly creditable specimen of pen drawing, the excellence of which taxed the credulity of many to believe that it was executed with a pen. The College also exhibited specimens of ornamental business penmanship.

Falkenstein & Brandt, of the Pacific Shirt Factory, showed a large assortment of gentlemen's shirts and furnishing goods. The shirts were of various qualities and prices, made of good material, and were well shaped and gotten up.

William Englander, of San Francisco, contributed a case of tassels, fringes, gimps, etc., of his own manufacture.

S. P. Taylor & Co., of San Francisco, agents for the San Lorenzo and Pioneer Paper Mills, exhibited samples of straw, medicated, wrapping and printing paper, of various sizes and colors, manufactured at the above named mills.

John Mallon, of San Francisco, glass cutter, exhibited specimens of his skill, comprising cut, stained and ground glass, side lights and head lights for hall doors of private dwellings, steamboats, churches, etc.

Charles E. Fleming & Co., of El Dorado County, exhibited specimens of what is called landscape rock—a curious formation of sandstone—and the El Dorado polishing powder, obtained from the top stratum of the same quarry, which is claimed to surpass silicon for polishing and cleansing purposes

John A. Ball, of Grass Valley, exhibited a model of a snow elevator, his own invention. The snow is ploughed upon the elevator and carried to any required height by a succession of fans, or buckets, passing over an inclined plane. By a slight alteration the same elevator may be used to carry any substance with like facility or be employed as a water lifter. The model was worthy of examination.

John W. Cherry, of San Francisco, exhibited four signs and eleven block letters, as specimens of his commendable skill.

L. K. Hammer, of Sacramento, exhibited one square and one grand Chickering piano, from which melodious strains were frequently evoked, during the day and evening, by well known professional and amateur

musical artists. In his exhibition were also a flute, a violin and a clarinet.

Goodwin & Co., of San Francisco, exhibited a splendid assortment of luxurious furniture, comprising bedroom and parlor sets, and a magnificent bridal chair, all of which, for taste and skill, challenged admiration.

The Oakland Cotton Mills, of Oakland, exhibited forty pieces of cotton cloth from their mills.

H. Wachhorst, of Sacramento, exhibited a case of splendid gold and silverware, comprising jugs, vases, goblets, card cases, knives, forks and spoons, etc.

Frank G. Edwards, of San Francisco, exhibited samples of the first wall paper manufactured in California, upon which was delineated a variety of tropical scenes.

William H. Jessup & Co., of the Eureka Match Factory, made a fine display of goods in their peculiar line, which were tastefully arranged upon a revolving pyramid, on the pedestal of which stood a wax doll, finely dressed, which was raffled off for the benefit of the orphans.

The North American Wood Preserving Company presented specimens of wood preserved by a peculiar process, by which it is claimed that the end is gained of rendering the wood proof against dry and wet rot, and impervious to the attacks of the toredo and all marine insects, while the fibre of the wood remains intact and is in no manner impaired. The many advantageous uses to which this wood thus prepared can be put will naturally occur to the reader—such as the construction of wharves, foundations of buildings, and pavements, etc.

Jones & Peterson, of Antioch, Contra Costa County, exhibited in the shed adjoining the Pavilion a patent spring hammer, which dispenses with the necessity of employing a striker. It is operated by a treadle passing along on the right of the anvil, and the blow can be governed with as much accuracy as by hand, while the hammer can be moved to any part of the anvil. The hammer strikes a very powerful blow with the exercise of very little muscular power.

H. B. Martin & Co., of San Francisco, exhibited a patent oscillating double cylinder steam engine of four horse power, which occupies a compass of three feet by ten inches. The peculiarity of this engine consists in the fact that the steam chest and slide valves of the ordinary engine are dispensed with. The steam is admitted into a plug running crosswise through the cylinder. The plug is cast solid in the centre, and when it is receiving steam on one side it is exhausting it on the other, and it requires but the oscillation of the cylinder to reverse the position of the plug, and admit steam to the opposite piston. The motion of the engine can be reversed by the turning of the plug, by means of a lever, without shutting off steam. There is no connecting rod, the piston being attached directly to the crank. It is claimed that it does not require a practical engineer to operate this machine. They also exhibited a hydrostatic engine, on the model of the steam engine above described, with the exception that one is steam and the other water packed; a pump, on the principle of the engines above described, for irrigating, railroad or family use; and a rotary pump, for deep wells or mines, which is constructed without valves, and is claimed to possess sufficient capacity to force water three hundred feet. These are California inventions.

A. C. Taylor, of San Francisco, exhibited a new portable range, the oven doors and outer flue plates of which are filled with cement, which being a non-conductor of heat, retains the caloric and makes the oven to

bake as though made of brick. A lower oven is heated by a blast of hot air obtained in a peculiar manner. In addition to this range—or rather in connection with it—Taylor showed to visitors a number of ingenious contrivances, in the way of kitchen utensils and appurtenances, which merit careful examination by housekeepers.

E. C. Bickford, of Petaluma, exhibited a patent traction gate, which is suspended on two posts, to which wheels are attached. This gate is simple, can be very cheaply constructed, and is particularly adapted to ranches. He also showed a model of a carriage attachment gate, which he claims can be swung to, regardless of the state of the wind.

Robert Blair, of San Francisco, showed a miniature engine, which is driving two of Hendy's concentrators. This engine was constructed during Blair's leisure hours in the first year of his apprenticeship, the patterns having also been made by him. The model evinced considerable skill in its construction.

R. R. & J. Craig, of Nevada City, exhibited a California invention in the shape of a hydraulic nozzle, the merits claimed for which are that it obviates kinking and danger in using, and can with facility be made to throw water in any direction.

Mrs. M. E. Gerrish, of Sacramento, exhibited two show cases filled with flowers, wreaths, leaves, etc., superbly wrought in wax.

Miss Julia Dunn, of Sacramento, also showed some very pretty wax-work bouquets, lilies, etc.

Miss Ellen Megerle, of Sacramento, exhibited some very fine silk and linen embroidery, well worthy of commendation.

Mrs. Horace Adams, of Sacramento, had a fine collection of shells; a vase of autumn leaves from the White Mountains; and shell, hair and other work—all of which, in their arrangement and execution, gave evidence of much care and a refined taste.

Miss Helen M. Brooks, of Sacramento, exhibited some beautiful wax-work, including some graceful pond lilies and a bouquet of wax flowers.

Mrs. J. L. Hummel, of Sacramento, exhibited many proofs of her skill with the needle, in the way of silk and cotton embroidery; in her case were also some Masonic regalias, which are pronounced equal to the best work of the kind produced in San Francisco.

Miss Lillie Hamilton, aged thirteen years, exhibited a fine pieced quilt, evincing much care and taste.

Mrs. A. D. Whitney showed a very prettily arranged medley picture.

Miss Sarah C. Marvin, of Sacramento, exhibited a hair bouquet very tastily arranged.

Mrs. William H. Hobby, of Sacramento, also exhibited a very pretty hair bouquet.

Mrs. R. J. Merkley, of Sacramento, exhibited a beautiful wreath of feather flowers.

Mrs. T. M. Coggins, of Sacramento, exhibited specimens of retouched photographs, evincing skill and good judgment.

Miss Mollie Tittle exhibited some very fine crochet work tidies and a pretty bead cushion.

Miss Maggie Ormsby, of Sacramento, exhibited some very pretty embroidery work.

Miss Annie E. Hoag, of Washington, exhibited some neat worsted picture frames and embroidery on perforated card-board.

Miss Lottie Hoffman, of Sacramento, exhibited some very fine silk embroidery and water-color paintings.

Miss C. Hoffman, of Sacramento, showed some pretty chenille work.

Miss M. McCormick, of Sacramento, exhibited some pretty crocheted tidies and an ornamental pincushion.

Mrs. J. L. Sturtevant, of Placerville, contributed some beautiful wax work, chief among which was a cross with trailing passion vines and a crown of thorns.

Mrs. B. N. Bugbey, of Folsom, exhibited a large and fine crochet tidy.

Mrs. M. H. Herbert, of Carson City, exhibited a very fine beadwork pincushion and mat.

Mrs. J. C. Rodgers, of Sacramento, exhibited two pretty and ingenious corn-husk hats.

Mrs. L. H. Foote, of Sacramento, showed a beautiful seaweed wreath surrounding a cross of the same material, framed.

Miss Lulu Adams, of Sacramento, exhibited some very neat specimens of plain sewing.

Miss Agnes Hummel, of Sacramento, aged eleven years, contributed some very creditable productions of her needle, in the shape of a braided and embroidered toilet set, an embroidered child's dress and some application work.

Miss Mary E. Clark, of Sacramento, exhibited a prettily arranged bed quilt, which work must have required extreme patience on her part.

Miss Mary Denden, of Happy Valley, contributed a splendid raised worsted work pincushion, which attracted much attention from the critical of her own sex.

Mrs. J. P. Odbert, of Sacramento, exhibited a fine wreath of framed raised worsted work.

J. L. F. Warren, of the California *Farmer*, among his interesting collection, exhibited a bag of flour, branded: "Horner's Mills, Union City (Cal.), half barrel, forty-nine pounds. Superfine extra. Warranted from pure California wheat. October, eighteen hundred and fifty-three. Horner & Co., agents, San Francisco." We are informed that this was the first bag of flour made from California wheat, ever exhibited at a California fair, a premium having been awarded to its then exhibitor in eighteen hundred and fifty-three. The flour retains its sweetness to this day, bearing high testimony to the qualities of California wheat.

The Domestic Carpet Manufactory, of San Francisco, exhibited several pieces of rag and list carpet of home manufacture.

L. Price, of San Francisco, showed a case containing ladies' fancy gaiters of various materials, colors and styles, which are well shaped and gave evidence of good workmanship.

Thomas O'Neil, of San Francisco, ornamental glass cutter, exhibited head lights and ceiling sash lights of ornamental cut glass. This was California work and reflects much credit upon O'Neil.

Ferdinand Woodward, of Sacramento, exhibited what is styled a "hydropic spark arrester." This invention consists in surrounding the smoke funnel of locomotives and other engines with an inclosed water tank, into which all sparks and cinders are received. The apparatus also disposes of them after they are received.

Hucks & Lambert, of San Francisco, exhibited samples of their anti-friction axle-grease.

James B. Parsons & Co. (by R. H. McDonald & Co., of Sacramento), exhibited Bowman's washing compound and a preparation for removing grease and other stains.

J. W. Kinser, of San Francisco, exhibited the American spring bed The spring of this bed is obtained by slats suspended lengthwise on straps of vulcanized India rubber, the slats being suspended to the rub-

ber by means of small iron bolts and hooked strips of iron. Simplicity and flexibility are the main features of this bed.

F. T. Houghton, of San Francisco, exhibited the automatic clothes washer and boiler, in which the hot suds and steam, by the action of heat, are driven up through tubes, poured upon the clothes, and forced through the fabric, cleansing all articles without any rubbing. A thorough rinsing finishes the process. Houghton also exhibited a patent side-saddle, invented by Mrs. Clara A. Bartlett, which has many points by which it recommends itself to lady equestrians.

The California Wine Cooperage Company, of San Francisco, exhibited some very large sized casks, one of which is constructed without visible hoops.

Hughes, Kimball & Co., of San Francisco, exhibited a patent tire upsetter, for which these advantages are claimed: 1st. The power is more direct in application, the movement being in a curve, to operate upon a curved form. 2d. The line of power is directly in the line of resistance. 3d. It is ready of adjustment and rapid in its operation. 4th. One man can operate it alone. 5th. The tire is held beneath a convex, to prevent buckling or kinking while under pressure. 6th. The smoothness of the outside and edges of the tire are preserved by a simple and effective device. 7th. By a rapid shifting of pivots the power of the machine may be increased to suit the resistance to be offered, without altering the length of the lever.

D. L. Smith and W. H. Wiester, of San Francisco, exhibited the Randall rake, for which the exhibitors claim that it will pass over obstacles, carrying the hay with it at right angles to the ground, twenty-two inches high; that it will rake along or across ditches, on stony or uneven surfaces, without discharging the load; and that in gleaning it does not shell or thrash the grain, but gathers it as carefully as the human hand can. There are many other meritorious qualities connected with the Randall rake.

Casebolt & Kerr, of San Francisco, exhibited some of their first-class work, in the shape of buggies and hacks.

George P. Kimball & Co., of San Francisco, also exhibited some very fine buggies, etc.

F. B. Lamb & Co., of San Francisco, exhibited the pioneer washer, Wellington's patent vegetable cutter, a patent horse-shoe nail-clincher and a clothes-horse.

Ravenna Ghirardelli & Co. exhibited a case of palatable looking macaroni and vermicelli from the Italian Union Manufactory.

Dana & Codington, of San Francisco, showed specimens of glue from the Pacific Glue Factory.

Elam & Howes, of San Francisco, made a good display of willow and wooden wares.

L. Steudeman, of Sacramento, showed a case of very fine ladies' gaiters and slippers.

L. Elkus, of Sacramento, exhibited a large stock of underclothing and California-made shirts.

R. W. Jackson, of Sacramento, exhibited some very fine shell jewelry and manzanita boxes.

Jessup & Beers, of San Francisco, exhibited a number of dental instruments and various sets of false teeth.

The Pacific Necktie Factory exhibited a case of tasty neckties of all descriptions, bearing fanciful names.

Haynes & Lawton. of San Francisco, exhibited some very fine specimens of gold and silver plating from the Pacific Plate Works. The work was executed in a very creditable manner.

Lundberg & Marwedel, of San Francisco, made an exhibition of telegraphic apparatus.

I. Morgan, of San Francisco, exhibited the California State Cement—a preparation for mending breakages in almost any article.

J. Renz, of Sacramento, showed several cases of herb bitters, claimed to be an excellent article for diseases of the blood, ague, colic, etc.

A. Bergmann, of Sacramento, had on exhibition a good variety of pickles, canned fruit, ketchups and sauces.

Mrs. J. P. Odbert, of Sacramento, exhibited in the lower hall a choice lot of jellies, pickles and preserves.

C. G. Kelley & Co., of San Francisco, made an exhibit of the preparation known as the "American Washing Fluid." The article was represented as excellent for cleansing clothes, glass, paint, etc.

There were quite a number of excellent displays of fruit, and every collection was creditable to the exhibitor. Mrs. A. S. Greenlaw, Mrs. W. N. Brooks, L. S. Graham, J. S. Harbison, E. Pierce, of Sacramento, each had fine varieties on exhibition.

I. Landsberger, of San Francisco, made a display of California wines and brandies, comprising Sonoma white, hock and port wines, and cognac and other brandies.

Hoyt & Howse, of Sacramento, displayed a variety of preserved fruit and tomatoes.

Few visitors to the Pavilion failed to admire the beautiful black walnut frame made by Snow & Roos, encasing Marple's splendid picture of the Golden Gate.

I. L. Merrill, of Sacramento, exhibited in the upper hall a number of fine kerosene lamps of various styles, fancy crockery ware, etc.

Long & Daly, of San Francisco, exhibited a light and graceful single scull racing shell.

Mrs. Blackwood, of Sacramento, exhibited quite a pretty pieced silk sofa cushion.

H. T. Graves, of San Francisco, made quite a display of wire work of various descriptions.

The Standard Soap Company, of San Francisco, exhibited various kinds of soap and candles, and the products incidental to their manufacture.

B. F. Barton & Co. exhibited dairy and table salt, saleratus, etc., all of the best quality in their respective grades.

The San Francisco Candle Company made a display of candles in the various stages of their manufacture.

Wentworth, Hobart & Co., of San Francisco, exhibited a case containing very fine ladies' shoes and gaiters of various styles, materials and colors.

REPORT OF COMMITTEE ON SILK CULTURE.

The committee to whom was given the subject of the silk business, from the mulberry tree to the production of the cocoon, have attended to their duty and beg leave to submit their report.

Very few persons, even at this stage of this vast and peculiarly interesting business, can form any conception of its real value to our State in coming years. The mere assertion that it will be as millions of dollars annually would be esteemed visionary—but time will tell. Sixteen years ago the prophecy was made of what is seen in this fair—the manufacture of silks in our State.

The committee find, on examination, quite a number of different samples of cocoons, collections of eggs of all the different varieties of the silkworm known to commerce, and an exhibition in all departments that would actually astonish the raisers of the silkworm in any of the countries of Europe. To those conversant with this interest it must be evident, by what is shown, that California is destined at no distant day to excel any other part of the world in this industry, and our people and State will do well to foster this important business. The following is a list of the exhibits :

L. Prevost, of San José—Twelve boxes containing wreath of different varieties of cocoons; silk butterflies laying their eggs; one lot of California cocoons and lots of cocoons of the following varieties: Turkish, White Japanese, Green Japanese, Yellow Portugese, White Portugese, Old French, Wild California, Yellow Mountain, New French, White Oak, Mulberry Trees; and the actual silk business, from mulberry trees to the cocoons, feeding of worms, etc.

Miss Leonie Saufrignon, of San José—One bouquet of cocoons.

Mrs. W. Erkins, San José—One lot of cocoons.

Dr. De Witt C. Franklin, Los Angeles—One lot of cocoons.

Mrs. J. Saufrignon, San José—Bouquet and wreath of cocoons.

Mrs. Alice Boston, Santa Cruz—One variety of cocoons.

John Smith, Sacramento—One variety of cocoons and one sample of mulberry trees.

John Rice, Yuba County—One variety of cocoons.

Don José Olivia, Hornitos, Mariposa County—One variety of cocoons.

G. E Goux, Santa Barbara—One sample of cocoons from one hundred thousand raised this year.

Thomas A. Garey, Los Angeles—One sample of cocoons and one bouquet.

Albert Brewster, San Gabriel—One variety of cocoons.

A. Packard, Santa Barbara—One sample of cocoons from one hundred thousand raised this year.

M. A. Goddard, Sacramento—One sample of Japanese cocoons.

Mrs. L. Sillers, Antioch, Alameda County—One sample of cocoons.

Muller & Jasard, Nevada City—One sample of cocoons.

Byron S. Wilson, Santa Clara County—One sample cocoons.

A. F. Goddard, Sacramento—One sample of Japanese cocoons and one sample of mulberry trees.

Louis Hess, Placerville, El Dorado County—One sample of Japanese cocoons.

Dr. D. W. Koehler, ———, Oregon—One sample of cocoons, first raised in Oregon.

George Reed, Snelling, Merced County—One sample of cocoons.

Mrs. L. Waldron, Sacramento—One sample of cocoons.

Mrs. Mary Jennings and Mrs. W. Flint, Sacramento—One sample of Japanese cocoons, in cases; one sample of European cocoons, in cases; one sample Turkish cocoons, in cases; one sample Japanese cocoons, in brush; one sample European cocoons, in brush; one sample Turkish cocoons, in brush.

William H. Haynie, Sacramento—Sample lot of cocoons, taken from seven hundred thousand of this year's feeding; sample lot of Japanese worms, feeding; four cartoons of silkworm eggs, prepared for the European market; samples of mulberry trees.

I. N. Hoag, Yolo County—Sample of Japanese silkworm eggs; sample of European silkworm eggs; sample of Turkish silkworm eggs; skeins of reeled silk.

Robert Williamson, Sacramento—Sample of mulberry trees.

J. S. Harbison, Sacramento—Samples of moretti mulberry and multicaulis trees.

C. W. Reed, Yolo County—Sample of morus multicaulis trees.

Your committee have taken the pains to give a full list of the exhibitors in this department, together with the samples exhibited by each, to show that the business is not simply confined to one or two localities, but that it is already widely spread throughout this State, and is commenced in Oregon.

It is not only due to the "pioneer" of the business in this State, but also to the pioneers in the respective counties and localities represented, to give their names to the public, and make record of the same in the transactions of your society for the year eighteen hundred and sixty-eight.

Your committee have no information as to the extent of the operations of most of the exhibitors, and will therefore confine themselves to giving a short notice of the operations of two of the largest silk growers in the State—William M. Haynie and I. N. Hoag.

Mr. Hoag's cocoonery is situated about three miles above Sacramento City, on the Yolo side of the Sacramento River. He has a large plantation of mulberry trees, both from seed and cuttings, from which have been fed about one million worms the present season, succeeding beyond his most sanguine expectations in producing quantity and quality, both of cocoons and eggs.

Mr. Haynie's cocoonery is located just beyond the limits of Sacramento City, on the road leading to Smith's gardens. It was erected the past summer, with special reference to silk culture. He has also seven acres of mulberry trees planted on his homestead, and plantations of trees north of the American River, both from seeds and cuttings, of the most approved variety.

This gentleman commenced feeding his first batch of worms on the first of July, which consisted of about eight hundred thousand worms of the French variety. He, too, has been successful beyond his most sanguine expectations in producing good cocoons and eggs.

The committee are glad to learn that a market for silkworm eggs has been opened up in Europe, which will probably require all the eggs that can be produced in this State for years to come, at remunerative prices. The demand for the eggs in Europe is owing to the well known fact that the silk worms cannot be reproduced from eggs grown there, on account of the disease peculiar to those countries. Of late years they have had to look to Japan for a supply of eggs, which can as well be produced here, and those of a superior quality. While your committee would not ignore any one of the exhibitors in this department, they felt called upon to make the foregoing statements for the encouragement of those who are now small growers, and others who may be contemplating going into the silk industry, but who are still in doubt of the final results. We find L. Prevost still at the post of honor, making a fine exhibition of the silk business in all its departments, up to the manufacture. All other exhibitors, in honor to the pioneer, having withdrawn their claims to the premium offered by your society, we award said premium of fifty dollars to him.

In this connection the committee remark: William Holdman has secured a patent for the production of silk from the bark of the mulberry tree, and an agent has arrived in California to form a company for the establishment of a factory to work on the new plan. The yearling branches are cut in the late winter or early spring, before the sap has commenced to rise, and are steamed for half an hour, to loosen the bark, which is then detached, and steeped for several days in a solution of potash. This dissolves and disintegrates the nonfibrous portion of the material, and the bark is washed to cleanse the fibre, which is next boiled in potash ley, washed in warm and in cold water, boiled in a solution of alum, one pound in six gallons of water, dried, and finally combed for spinning. This is the whole process as patented, and it is cheap and simple. We have seen a sample of silk represented to have been made by this method, and it has a fine fibre, five inches long, of regular thickness and of good color and lustre. We were informed that very little silk has been made in this way, probably not an ounce in all, and we are unable to present any statement of the amount of silk that can be made from a ton of mulberry twigs, or of the cost of production.

All of which is respectfully submitted,

W. R. CLUNESS,
A. B. NIXON,
J. S. HARBISON,
COL. WARREN,
Committee.

OPENING ADDRESS.

DELIVERED AT THE SEVENTH ANNUAL FAIR OF THE NORTHERN DISTRICT—EIGHTEEN HUNDRED AND SIXTY-EIGHT.

By HON. W. H. PARKS, President.

Members of the Northern District Agricultural Society, and Ladies and Gentlemen:

We have assembled together again, after a lapse of two most prosperous years, to exchange congratulations, and return thanks for our continued and increased prosperity, and to place on exhibition some of our products and improvements, and to exchange ideas with reference to further improvements. It becomes my duty, as the presiding officer, to make a brief statement of the condition of the society, and to make such suggestions as would, in my opinion, promote the interests of the same. I am aware of the popular prejudice existing against long, statistical opening addresses, therefore, I shall be brief. I will not attempt to reiterate what has been so often and so truthfully said, that California, as a State, possesses greater advantages, and has greater resources for agriculture and manufactures, than any other portion of the United States. Nor shall I go into facts and figures, giving the incredible number of bushels of wheat and barley raised per acre, nor dwell upon the mammoth size of potatoes, squashes, pumpkins, etc., the deliciousness of our fruits, or the delicate flavor of our wines, for all of these things have been stated and verified, and no longer create astonishment. I may, however, congratulate you upon the proud position our State occupies to-day. Although young in years, she has taken place with the first of the olden States in importance as a grain growing State. At the late Paris Exposition she stood first for her cereals, and her mechanics carried off more prizes, in proportion to the number of exhibitors, than did those of any other portion of the world. This, then, would argue that we not only have the soil, climate and natural wealth, but that we have also the genius and enterprise so necessary to the speedy development of our country.

I may also congratulate you upon the prosperous condition of the society and of the district which composes it. We do not judge of the success of a fair, or the condition of the society, by the number of exhibitions, but by the interest taken by the exhibitors, and the influence and effect it has upon the country. Taking this for a standpoint, we may well congratulate ourselves upon the success and the advantages of the society, and its founders, who struggled so hard for its establishment and success, may well be proud of their work. It is just ten years ago since

the first fair was held in this city, under the direction of the State Agricultural Society; and when we compare the condition of the district then, with its condition now, comment is unnecessary. It is to this society that we are greatly indebted for the improvement. We have exchanged the mustang for the thoroughbred roadster and draft horse. We have exchanged the wild Mexican cow for the domestic Durham and Devon; the coarse, hairy, Mexican sheep for the fine Spanish, French and Saxony Merino. We have done more: We have filled our granaries, and said to the world, give us commerce, and we will feed you all; and to-day our State is doing more than her share in feeding the hungry millions. But we must do still more, we must have a commerce of our own—we must have rival lines of steamers, and rival railroads, connected with all parts of the world. We cannot, and ought not, to expect the great margin in grain between this and other countries to continue. Then, let us prepare for such a state of things; let us prepare to produce at less cost; let us prepare to lessen the cost of freight through our own State to the seaport. It is an extravagant outrage that it costs as much to take produce from here to San Francisco as it does from there to New York. A great improvement can, and ought to be made, in our manner of shipping, by doing away with the extravagant custom of shipping in sacks. It is more than one-tenth of all the cost of producing, besides the loss of grain and the extra expense of handling. The difference in handling grain in bulk and in sacks is almost incredible, and I would recommend a thorough examination of this subject. I noticed a commercial statement of the shipment of our wheat, of two years ago, I think. We got for it eight millions of dollars; it brought in foreign markets sixteen millions. This shows that it cost one-half of the value of our product to put it in market from San Francisco. Now, at least one-half of the remaining half was paid for home freight and sacking, leaving only one-quarter of its real value for the producer. We must reduce the cost of producing and shipping as fast as the foreign demand diminishes, or we will be in the same condition that we were in a few years since—our granaries overloaded with grain that will not bring the cost of producing. We must encourage immigration to our State What we need is a population of laborers that we can depend upon, to increase our manufactures. The experiments in manufacturing have thus far proved successful. There is no reason why all of our woollen goods, clothing, boots and shoes, sugar, oils, agricultural implements, etc., etc., should not be manufactured in our own State. It is but a few years since we imported all our wagons and steam engines; now, who thinks of importing one? We want cheap labor and cheap capital, and as all operations of capital are based upon labor, we must first have the laborers and we shall be sure of the capital. It is governed by that unerring law of supply and demand, and is sure to flow where profitable and safe investments can be made.

Much has been done, through the agricultural societies of the State, for the dissemination of the knowledge of the advantages that our State possesses, and much is being done, and we now have a powerful auxiliary in the Labor Exchange recently established in San Francisco. This might be extended with profit to the interior. The laborers who come to our shores must be protected from the assaults of those who will not work themselves, or allow others to, unless they can dictate the terms. Labor is a commodity, and its price must be governed by the supply and demand; and all labor associations that attempt to hold it

higher than the demand will warrant are opposed to the best interests of the country. "The laborer is worthy of his hire," and no class will reap more benefit from a full supply of free labor than they themselves. There are hundreds of now day laborers who are competent to transact almost any kind of business, but, from the fact that labor is so high, they are prevented from engaging in the business they were educated for, and are compelled to work at day labor. We need more frequent intercourse with each other, in order to combine our efforts to bring about necessary reforms. The farmer is no longer the slow, plodding clod-hopper, nor the mechanic the mere machine, that they were once thought to be, but they command the very highest order of talent and genius; but there is not that exertion used by them to procure the beneficial results, from a combination of capital or the unity of action, that there is among other classes of men. When we reflect that all the real wealth of the State is based upon its agricultural and manufacturing resources, is it not surprising that greater efforts are not made for their development. Let us suppose that all of the incorporated companies that have been formed in this State for mining purposes had been formed for agricultural and manufacturing, that all of the assessments that have been paid for mining, had been paid for farming and manufacturing, what would have been the result? I think, without exaggeration, I may say that the amount of assessments would have purchased every acre of land in the State, that our population would have numbered four times its present number, that we would produce ten times as much grain as we now do, that our manufactures would be quadrupled, and that the assessed value of our property would be increased a thousand fold. We would have our clipper ships, our own lines of steamers, and our State would be checkered with railroads. Instead of having a transitory and excitable population, that are grasping at every shadow only to be deceived, we would have a population of substantial and wealthy farmers, merchants and mechanics.

We have truly an agricultural district, and capable of producing many articles at prices that will warrant shipment, such as wool, wine and oil, and there can be no doubt of wheat, when the expense of producing and shipping can be reduced to a reasonable rate. The superiority of our grain will always command for it enough higher price to pay the difference in cost of freight when this shall be reduced to its usual rate. There are other articles that might be produced with profit, such as sugar, flax, hemp and silk; and the day is not far distant when we shall export all of these articles in large quantities. It only requires our attention. Let the farmer pay as much attention to public affairs as his interest requires, and it will not be long before the necessary reforms will take place. Let them see that all laws discriminating against their best interests, such as now exists against the sheep growing interest, are repealed or amended. Let them have free roads and free bridges. Let them combine their capital to cheapen freight. We have a notable example of this in Colusa County. There the farmers are determined they will have freights at a reasonable rate. To accomplish this they have already put one steamer on the river, and have organized a company to put on still another; and they are reaping a reward for their enterprise by getting freights from twenty-five to thirty-three per cent. less than we do here. We have another striking example of the benefits of opposition lines, in the establishment of a new express company. It has already cheapened expressage very materially. We have no fault to find with old companies, no war to wage against them, but

competition is needed in transportation as well as in all other business, and the prospect of our having it are brightening. Until recently we have had but one line of communication between here and San Francisco, and only one between there and New York. We have now successfully established two or three lines of steamers to New York, and we have a prospect of the speedy completion of two lines of railroads between here and San Francisco. So vigorously are they pushing on the work on the great national highway, the Pacific Railroad, that we confidently hope at our next annual festival we shall have the pleasure of seeing many of our Eastern friends in our midst, participating in our enjoyment.

STATISTICAL TABLES FOR 1867.

TABLE OF STATISTICS.

Industrial and other statistical information for the year 1867, as reported to the Surveyor-General by the several County Assessors, embracing the entire State, except the County of San Mateo, one township in El Dorado County and one in Calaveras County.

COUNTIES.	Acres of land inclosed....	Acres of land cultivated..	WHEAT.		BARLEY.		Acres of land cultivated in 1868.....	Acres of wheat sown in 1868	Acres of barley sown in 1868.....
			Acres.	Bushels.	Acres.	Bushels.			
Alameda	125,581	90,666	59,801	1,322,454	14,751	475,702	98,753	69,400	18,180
Alpine	13,000	500	75	1,000	200	3,000	500	75	200
Amador	60,700	18,050	2,654	50,000	3,280	69,560			
Butte	240,664	42,966	20,630	482,470	10,422	220,350			
Calaveras	38,000	11,750	210	2,550	1,460	6,400			
Colusa	128,760	52,315	25,300	708,400	25,000	875,000			
Contra Costa	82,157	52,314	39,859	692,480	10,106	287,120	69,906	43,505	20,083
Del Norte	4,860	1,978	411	9,982	158	6,210	1,001	374	171
El Dorado	82,996	15,520	943	6,278	534	7,000			
Fresno	8,673	4,000	375	7,457	570	15,755	5,000	1,266	2,222
Humboldt	28,408	12,127	1,342	32,314	387	16,254	11,812	1,194	568
Inyo	3,500	2,080	343	8,090	378	9,747	730	208	240
Kern	3,750	2,400	200	5,217	883	24,893			
Klamath	3,201	1,500	62	1,080	15	240	1,429	601	19
Lake	11,030	8,730	4,169	62,299	1,917	24,362	6,405	3,075	1,728
Lassen	13,371	3,691	622	8,563	2,558	66,798			
Los Angeles	17,300	15,000	800	19,200	4,400	154,000	19,600	765	6,000
Marin	181,465	33,257	3,936	102,240	1,278	38,246			
Mariposa	24,999	4,084	1,235	5,309	2,344	7,816	3,665	829	1,669
Mendocino	135,000	46,000	15,600	200,840	4,340	127,500	41,000	11,000	4,000

Merced	135,000	20,000	3,000	45,000	5,000	125,000	31,500	12,000	7,676
Mono	11,720	2,495	393	7,268	408	7,560	3,347	786	408
Monterey	118,490	40,450	5,700	226,750	27,500	1,723,200	54,564	29,389	13,875
Napa	95,200	41,100	37,410	592,323	1,750	53,000	39,900	36,045	2,570
Nevada	58,575	23,250	675	12,000	100	2,000			
Placer	73,550	21,000	8,170	65,300	2,705	23,400	11,250	6,375	2,330
Plumas	45,632	2,200	951	14,541	62	1,990	2,000	850	50
Sacramento	210,148	75,274	8,852	131,000	18,600	375,000	52,607	7,602	28,195
San Bernardino	14,642	12,000	2,500	50,000	6,000	120,000	12,500	2,400	6,500
San Diego	2,300	1,950	400	8,000	1,270	31,750			
San Francisco	18,500	3,200	20	500	300	5,000	3,200	20	300
San Joaquin	268,000	126,000	91,800	1,197,400	30,700	429,800	155,000	125,660	26,950
San Luis Obispo	43,085	3,623	1,210	11,210	735	30,400			
San Mateo									
Santa Barbara	16,244	7,200	1,500	1,200	2,200	6,800	11,500	1,500	2,200
Santa Clara	467,931	125,740	80,339	1,229,309	9,210	170,400	138,330	88,860	8,280
Santa Cruz	50,785	17,405	7,039	166,676	1,997	62,680	15,033	7,041	2,956
Shasta	59,480	33,621	7,421	86,429	7,325	187,215	33,621	7,421	7,325
Sierra	13,920	1,495	206	3,780	365	8,845	1,430	206	367
Siskiyou	63,052	18,424	6,321	126,420	2,234	66,920	18,424	6,321	2,234
Solano	192,988	76,739	61,329	1,454,830	13,605	348,980	73,660	54,738	13,098
Sonoma	446,963	246,063	123,814	1,079,181	15,405	279,156	243,465	120,670	14,857
Stanislaus	120,594	200,456	144,852	2,317,632	42,748	854,960			
Sutter	112,619	93,734	31,585	287,167	29,636	431,461	38,864	20,700	15,788
Tehama	79,515	26,816	14,520	300,000	7,213	15,100	109,264	30,000	11,325
Trinity	10,926	3,753	960	11,370	108	1,487			
Tulare	15,681	5,310	2,636	39,884	3,757	65,584			
Tuolumne	40,110	13,600	1,950	19,600	3,550	18,500			
Yolo	96,416	73,245	51,575	1,071,730	11,050	172,684	78,750	63,970	10,110
Yuba	58,842	22,613	7,193	143,000	6,200	150,300			
Totals	4,136,523	1,757,684	882,888	14,432,883	336,723	8,200,075	1,397,537	792,842	202,474

TABLE OF STATISTICS—Continued.

COUNTIES.	OATS.		RYE.		CORN.		BUCKWHEAT.		PEAS.	
	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda	2,583	54,906	15	300	394	14,920	123	1,770	507	906
Alpine	45	470	.....	.....	35	700	.....	.....	6	125
Amador	66	.....	13	90	450	13,400	8	200	5	150
Butte	456	10,707	50	1,050	293	10,145	.....	.....	21	400
Calaveras	.....	.....	.....	.....	171	6,500	.....	.....	.....	.....
Colusa	200	7,000	.....	.....	185	3,700	2	40	3	90
Contra Costa	611	22,158	5	100	328	3,908	10	416	4	58
Del Norte	445	18,661	.....	.....	8	320	.....	.....	238	5,715
El Dorado	203	890	127	565	50	860	.....	.....	5	90
Fresno	.....	.....	.....	.....	200	4,178	.....	.....	1	26
Humboldt	3,698	165,472	.....	.....	315	7,555	7	155	703	30,034
Inyo	55	368	.....	.....	240	7,600	.....	.....	1½	77
Kern	60	1,800	.....	.....	53	2,120	.....	.....	.....	.....
Klamath	45	950	12	71	44	369	1	18	27	648
Lake	232	3,873	17	197	392	7,324	⅛	2	1½	16
Lassen	469	11,386	.....	.....	5	105	.....	.....	9	254
Los Angeles	.....	.....	35	700	5,300	238,500	50	1,500	20	500
Marin	12,460	513,678	15	462	30	684	.....	.....	19	540
Mariposa	261	372	142	218	33	415	.....	.....	2	80
Mendocino	10,800	34,000	.....	.....	760	22,800	.....	.....	160	3,800

Merced					978	29,340				
Mono	163	2,805	1	10	300	10,200	1¼	23	1½	25
Monterey	150	5,700	15	458	325	8,050	50	1,375	520	15,100
Napa	1,045	32,440	5	60	630	17,000	1	14	4	65
Nevada				10					15	
Placer	760	1,300	274	400	15	150			4	115
Plumas	979	29,965			4	1,000	6	150		
Sacramento	1,550	31,000	30	510	2,034	59,000	30	915	21	635
San Bernardino	9	130	6	120	2,200	50,000				
San Diego					300	12,000			12	260
San Francisco	600	35,000							21	300
San Joaquin	7	260	35	386	945	19,900			12	700
San Luis Obispo	30		3		890	30,360	4	40	10	40
San Mateo										
Santa Barbara	150				160	16,000			10	100
Santa Clara	500	58,000	120	1,560	202	2,272	4	65	1	600
Santa Cruz	719	24,8 6	52	1,010	457	14,985	162	1,585		
Shasta	1,244	11,460	74	520	980	181,145			26	487
Sierra	220	7,200								
Siskiyou	3,004	90,120	34	1,190	84	2,520	14	252	5	100
Solano	400	9,500			75	1,635				
Sonoma	10,850	274,932	179	1,743	3,715	98,537	3	47	28	1,250
Stanislaus					100	2,000				
Sutter	239	5,615	56	984	706	20,065	90	1,358	4	101
Tehama	76	2,850			110	2,280				
Trinity	107	2,025			31	710			12	389
Tulare	27	550	12	260	374	8,515				
Tuolumne	25	245	36	347	104	400			30	
Yolo	40	1,420	47	1,550	140	2,340	5	100	22	560
Yuba	700	20,650	85	1,200	504	14,550	10	250	11	236
Totals	66,278	1,216,977	1,495	16,071	25,670	971,055	680½	10,275	2,512½	64,470

TABLE OF STATISTICS—Continued

COUNTIES.	PEANUTS.		BEANS.		CASTOR BEANS.		POTATOES.		SWEET POTATOES.	
	Acres	Pounds	Acres	Bushels	Acres	Bushels	Acres	Bushels	Acres	Bushels
Alameda			589	5,970			895	69,020	4	500
Alpine			6	50			80	6,000		
Amador			9	320	¼	80	100	5,700	4	600
Butte	10	21,700	47	1,300			140	19,410	34	3,930
Calaveras			15	500			52	4,600		
Colusa			3	78	3	275	20	1,800	9	540
Contra Costa			257	12,508			56	5,141		
Del Norte			10	210			89	4,795		
El Dorado	3	4,000	15	228			81	5,460		
Fresno			1	55			100	3,865	14	590
Humboldt			2¾	80			1,360	282,106		
Inyo			20	286			50	760		
Kern			20	300			80	6,650	3	100
Klamath			11	350			65	2,620		
Lake							612	5,055		
Lassen			5	175			22	3,025		
Los Angeles	10	10,000	600	12,000	113	169,500	1,000	100,000	50	3,750
Marin			28	732			3,021	24,846		
Mariposa			5	163			54	3,855		
Mendocino							1,200	36,000		

Merced			50	1,400			24	4,800	12	1,350
Mono	1	30	9	97			100	4,889		
Monterey			1,680	52,800			1,320	315,500		
Napa			5	185	10	24,000	20	2,870		
Nevada							200	16,000		
Placer			4	80			105	4,500	4	381
Plumas							90	8,332		
Sacramento	11	12,000	84	3,124			122	12,565	243	35,785
San Bernardino			59	1,180			20	2,400	2	200
San Diego			21	525			21	1,260		
San Francisco			31	450			880	35,000		
San Joaquin			9	260			77	8,700	22	4,800
San Luis Obispo			473	10,123	17	200	200	9,480		
San Mateo										
Santa Barbara			100	24,600			35	6,000	10	90
Santa Clara			62	1,000			295	20,000	50	750
Santa Cruz			277	3,603			329	48,400		
Shasta	3	256	164	3,884			300	21,000	115	2,565
Sierra							62	5,800		
Siskiyou			15	300			200	30,000		
Solano										
Sonoma	2		25	260			6,336	168,840	3	60
Stanislaus							25	1,000		
Sutter	⅛	300	107	3,126	138	136,700	14	2,588	69	10,990
Tehama	28	7,080	12	314			60	9,412	16	3,012
Trinity			33	710			101	11,300		
Tulare			50	500			13	920	6	575
Tuolumne			26	150			37	2,720		
Yolo	45	22,640	44	894			90	4,480	41	2,460
Yuba			158	3,620	60	6,500	190	9,594	23	2,380
Totals	113⅛	78,006	5,231¾	149,893	341¼	337,255	20,908	1,359,658	734	75,408

TABLE OF STATISTICS—Continued.

COUNTIES.	ONIONS.		HAY.		FLAX.		HOPS.		TOBACCO.		BEETS.
	Acres.....	Bushels.....	Acres.....	Tons.....	Acres.....	Pounds.....	Acres.....	Pounds.....	Acres.....	Pounds.....	Tons.....
Alameda	409	23,275	9,285	13,786	12	250	57	3,050	.....	.....	500
Alpine	1	20	500	600	.....	.....	.....	.....	.....	.....	2
Amador	16	370	6,000	4,560	.....	.....	6	3,200	¼	210	8
Butte	24	1,100	8,000	6,408	.....	.....	2	6,150	1½	3,250	106
Calaveras	.....	.....	5,800	5,300	.....	.....	.....	.....	.....	.....	3
Colusa	6	390	10,212	12,200	.....	.....	.....	.....	.....	.....	8
Contra Costa	16	2,900	10,700	15,618	.....	.....	.....	.....	.....	.....	618
Del Norte	2	113	265	301	.....	.....	.....	.....	.....	.....	62
El Dorado	8	150	6,881	5,795	.....	.....	½	400	1	190	3
Fresno	1	60	1,223	1,181	.....	.....	.....	.....	.....	.....	.....
Humboldt	1¾	177	1,369	2,871	.....	.....	.....	.....	.....	.....	.....
Inyo	3	175	525	350	.....	.....	.....	.....	.....	.....	1½
Kern	7	600	930	1,375	.....	.....	.....	.....	.....	.....	10
Klamath	1	18	147	238	½	11	.....	.....	.....	.....	.....
Lake	¼	31	2,187	3,395	.....	.....	.....	.....	.....	17	16
Lassen	1	60	1,323	1,366	.....	.....	.....	.....	.....	.....	.....
Los Angeles	25	6,250	320	800	.....	.....	50	50,000	15	8,250	20
Marin	7	298	10,463	13,264	.....	.....	.....	.....	.....	.....	675
Mariposa	2¼	225	11,000	18,500	.....	.....	.....	.....	.....	.....	12
Mendocino	.....	.....	11,000	18,500	.....	.....	250	30,000	.....	.....	.....

Merced	10	2,150	3,400	3,225							2¼
Mono	¼	25	965	1,186							8
Monterey	640	3,000	2,500	5,000					20	12,100	50
Napa	3	480	6,505	7,806			1	900			75
Nevada	5	250	9,000	13,000							
Placer	1	100	10,607	11,219			1	1,400	⅛	150	71
Plumas	3	119	10,967	13,591							15
Sacramento	50	3,670	21,533	19,384			430	412,500			143
San Bernardino	14	850	800	1,430							2
San Diego	11	440	360	730							3
San Francisco	25	700	310	400							97
San Joaquin	11	2,150	15,500	14,000			5	1,600			17
San Luis Obispo	8	195	50	2,134							4
San Mateo											
Santa Barbara	5	700	1,100	2,200			4	800	10	1,100	5
Santa Clara	60	6,600	13,574	23,875			81	16,900	74	58,000	863
Santa Cruz			3,105	5,373	58		5	2,180			
Shasta	30	3,820	3,800	3,545			3	700	2	550	16
Sierra			7,319	6,320							12
Siskiyou	8	1,800	3,475	6,946							12
Solano	4	200	18,265	14,085	18						20
Sonoma	5	300	29,285	40,378	8		57½	1,727	20	7,000	24
Stanislaus			1,500	1,200							
Sutter	5	670	9,169	9,977	32	7,600	5	4,400			
Tehama	8	1,060	4,000	4,800							4
Trinity	9	820	1,587	1,882							22
Tulare			820	1,543							
Tuolumne	11	112	2,170	2,220							5
Yolo	68	2,885	8,251	12,258			5	6,500			44
Yuba	10	900	9,159	8,194			29	24,500			5
Totals	1,531½	70,200	297,106	364,309	128½	7,861	992	569,907	153⅝	90,817	3,563¾

TABLE OF STATISTICS—Continued.

COUNTIES.	Tons of turnips	Total of pumpkins and squashes	COTTON. Acres	COTTON. Pounds	Pounds of silk cocoons	Acres of broom corn	Pounds of butter	Pounds of cheese	Pounds of wool	Pounds of honey
Alameda	95	747				70	141,600	7,800	266,000	4,570
Alpine	30	2					20,000	200	2,000	200
Amador	8	23					30,000	2,000	8,000	1,671
Butte	108	100				2	56,750	500	185,800	18,730
Calaveras	9	31					21,000	1,325	47,000	5,000
Colusa	3	7				15	25,617	1,230	508,000	20,000
Contra Costa	703	2,010				3	10,010	18,600	161,300	15,000
Del Norte	41						35,380		3,740	1,260
El Dorado	5	7					17,000	100		980
Fresno		2					8,395		182,247	3,000
Humboldt							44,515	1,600	2,515	4,220
Inyo	4	26					3,000	1,500		
Kern	20	40					18,000	10,000	121,113	2,000
Klamath							4,980			878
Lake	149	22½	½	50			27,652	74,200	20,388	11,589
Lassen	100	200				2	32,450	10,000	16,000	160
Los Angeles	15	1,000	4	500		25	25,000	10,000	450,000	75,000
Marin	340	69					1,549,800	387,400	1,240	1,458
Mariposa	20	21					8,720	410	16,218	56
Mendocino							30,000	12,000	135,000	

Merced	3½	76				7	7,290	2,200	363,797	14,400
Mono	21	160				1	9,300	8,500		600
Monterey	40	500				8	670,000	195,000	557,000	17,800
Napa	22	135				3	135,000	8,575	14,550	3,800
Nevada					60		10,000			3,500
Placer	103	70					29,600	1,500	68,000	10,200
Plumas	28	7					154,010	2,000	11,300	
Sacramento	122	1,538			333	734	267,000	6,400	219,500	12,170
San Bernardino	8	478				17	15,690	10,050	41,400	53,700
San Diego	4	300					2,170	2,000		340
San Francisco	169	39					1,200	2,800		150
San Joaquin	25	65				½	200,500	17,000	133,000	3,000
San Luis Obispo	1½	8					26,345	121,000	292,000	7,150
San Mateo										
Santa Barbara	5	10			350		3,400	5,500	692,385	2,500
Santa Clara	45	1,374					219,920	1,567,580	55,750	11,995
Santa Cruz	4	671					54,620	4,500		4,365
Shasta	23	26					9,486	580	49,044	1,620
Sierra	36	6					33,360	2,000		686
Siskiyou	35	75				5	71,352	14,694	10,300	4,356
Solano	23					40	22,130	1,600	57,075	3,080
Sonoma	17	819				2	620,416	255,275	127,837	1,873
Stanislaus						25	10,500	5,220	835,000	77,600
Sutter	5	743				354	82,000	6,000	125,000	13,704
Tehama	4	7				80	20,800	1,540	428,690	5,420
Trinity	60	44					17,000	100		980
Tulare						20	13,415	1,250	337,360	9,755
Tuolumne	8	6					26,000		8,500	1,200
Yolo	34	426			2,300		53,070	3,650	152,000	15,942
Yuba	8	200				6	32,700	964	39,000	8,600
Totals	2,504	12,097½	4½	550	3,043	1,419½	4,964,213	2,786,338	6,915,049	455,455

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of apple trees...	Number of peach trees...	Number of pear trees.....	Number of plum trees...	Number of cherry trees..	Number of nectarine trees.....	Number of quince trees..	Number of apricot trees.	Number of fig trees.....	Number of lemon trees...
Alameda	118,600	18,300	30,890	21,300	17,800	2,700	1,600	1,500	1,050	1
Alpine	225	80	.....	.....	.....	.....	.....	.....	.....	.....
Amador	32,400	20,200	6,000	5,000	2,200	900	2,000	1,900	1,100	120
Butte	29,350	40,200	6,000	3,300	1,100	1,000	700	1,800	1,600	33
Calaveras	37,000	12,000	4,500	2,400	800	650	1,000	800	1,000	6
Colusa	17,000	21,000	3,000	2,000	600	900	210	600	530	3
Contra Costa	30,500	17,600	9,000	49,018	4,190	315	2,900	791	667	31
Del Norte	6,270	417	468	328	206	2	13	16	.....	.....
El Dorado	111,200	56,200	14,100	5,300	1,800	1,100	1,100	650	650	10
Fresno	1,042	2,335	378	131	15	.....	66	95	115	.. ..
Humboldt	33,586	540	1,222	2,626	1,014	4	71	14	2	.....
Inyo	290	370	50	.....	.....	.....	.....	.....	.....	.....
Kern	200	400	150	50	.....	18	10	50	30	.....
Klamath	2,607	1,216	191	322	81	61	37	18	.....	.....
Lake	9,210	5,487	1,174	1,531	159	96	101	130	47	.....
Lassen	14,500	10,000	3,300	180	.....	30	50	150	.....	... .
Los Angeles	6,500	9,000	4,000	100	100	200	600	1,820	2,600	2,300
Marin	4,360	1,610	850	1,400	800	60	220	100	30	10
Mariposa	6,950	7,550	800	530	200	100	100	290	240	.....
Mendocino	18,000	12,400	2,000	2,200	600	400	150	50	.....	.....

Merced	10,000	12,000	2,010	1,000	200	75	75	112	125	25
Mono	56	31	8	29	7	3	7	2	.....	.....
Monterey	12,519	10,607	10,917	1,190	786	360	34	963	89	21
Napa	50,000	25,700	14,000	5,130	5,400	730	925	1,600	645	20
Nevada	25,000	12,500	5,600	1,150	750	375	1,365	325	685	.....
Placer	35,500	23,500	8,400	3,400	1,400	830	1,680	840	1,050	28
Plumas	2,640	2,960	670	170	60	20	30	10	12	.....
Sacramento	63,650	74,300	23,000	10,700	3,750	3,000	2,300	7,000	4,000	25
San Bernardino	5,700	10,000	450	780	50	270	150	500	320	40
San Diego	330	670	370	70	40	25	80	460	184	40
San Francisco	1,600	110	800	400	260	20	15	15	12	.....
San Joaquin	45,000	45,500	8,500	4,000	800	1,200	600	3,250	2,750	.....
San Luis Obispo	3,300	1,300	1,100	500	220	70	200	300	130	.....
San Mateo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	16,000	8,000	3,800	550	600	800	900	2,500	2,800	850
Santa Clara	722,000	70,500	69,650	19,000	15,000	1,400	8,700	5,900	1,250	13
Santa Cruz	35,560	4,067	3,812	2,687	1,156	68	326	435	168	.....
Shasta	232,340	198,220	112,630	36,244	20,446	16,448	6,240	7,320	739	61
Sierra	5,410	2,805	750	341	261	47	70	29	7	1
Siskiyou	32,645	13,569	1,529	1,372	1,104	256	234	327	19	5
Solano	44,397	11,769	6,539	2,279	1,545	1,213	496	1,525	1,651	2
Sonoma	255,280	52,912	11,776	35,801	6,171	965	3,198	1,604	1,160	.....
Stanislaus	6,400	10,000	1,500	540	300	500	80	570	360	.....
Sutter	14,517	16,577	3,580	2,450	462	956	414	1,192	1,856	15
Tehama	7,800	23,000	1,900	1,200	410	420	125	950	475	5
Trinity	19,500	6,000	1,850	1,250	600	200	100	120	6	.....
Tulare	6,230	18,860	1,280	690	200	160	43	325	200	.....
Tuolumne	32,700	28,000	7,600	3,000	900	270	1,000	550	820	.....
Yolo	16,426	22,730	3,640	1,957	1,220	747	298	1,440	1,410	4
Yuba	32,500	26,500	7,600	4,400	1,700	1,450	1,900	1,500	1,800	43
Totals	1,217,790	969,692	302,392	195,896	93,989	43,999	40,404	52,308	33,924	3,712

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of orange trees..	Number of olive trees....	Number of prune trees...	Number of mulberry trees.....	Number of almond trees.	Number of walnut trees.	Number of gooseberry bushes.....	Number of raspberry bushes.....	Number of strawberry vines.....	Number of grape vines...
Alameda	7	6	600	135	1,000	400	35,000	46,000	256,000	185,000
Alpine							100	150	100	
Amador	140	20	280	370	850	300	10,000	13,000	113,000	1,140,000
Butte	195	34	7	380	800	30	3,500	1,600	132,000	459,000
Calaveras	20		17	550	75	500	1,500	20,000	630,000	457,000
Colusa	12			30	25	16	12	123	364	63,500
Contra Costa	86	87	100	48	316	159	4,851	5,923	716	298,752
Del Norte						13	685	10,112	10,650	
El Dorado	7		34	27	320	240	4,300	14,300	168,000	1,353,000
Fresno						12			250	5,520
Humboldt					7	41	3,951	46,086	47,970	260
Inyo									300	475
Kern	20					10				1,000
Klamath					12		518	5,382	11,966	
Lake	1		13	1	145	35	291	333	23,272	15,146
Lassen					1	1	500	1,000	3,000	1,500
Los Angeles	15,000	1,500	75	250	500	3,000			140,000	3,838,000
Marin			4	10	35	7	500	250	600	12,000
Mariposa				70	20		320	1,470	1,800,000	84,000
Mendocino							10,000		20,000	10,000

Merced	.....	.....	.....	6,014	30	.....	.....	.....	25,000	141,080
Mono	.....	.....	.....	6	.....	4	16	3	40	61
Monterey	.....	17	83	30	116	31	1,603	2,412	106,718	154,850
Napa	20	50	30	15	275	400	6,105	1,600	4,500	1,425,300
Nevada	175	.....	.....	22,750	65	90	15,000	1,000,000	300,000	165,000
Placer	12	.....	190	2,030	370	220	1,700	35,000	159,000	450,000
Plumas	.....	.....	.....	.....	.....	.....	200	850	65,000	2,300
Sacramento	130	50	250	200,000	1,500	2,400	5,200	12,800	109,000	1,035,000
San Bernardino	226	24	915	800	570	360	350	200	6,500	365,000
San Diego	122	500	.....	.....	23	30	20	100	550	40,000
San Francisco	.....	.....	.....	.....	.....	.....	400	200	40,900	134
San Joaquin	3	.....	250	400	300	100	1,000	500	17,500	500,000
San Luis Obispo	.....	275	.....	.....	.....	12	60	60	300	20,000
San Mateo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	820	12,000	1,500	9,000	11,500	2,700	150	700	2,000	278,000
Santa Clara	90	140	1,400	1,600	500	1,700	19,600	1,000	4,900,000	717,000
Santa Cruz	6	11	202	1,050	47	235	1,538	6,694	94,460	233,075
Shasta	17	6	12	22	1,864	394	1,348	11,892	12,320	1,321,426
Sierra	1	.....	12	11	10	13	1,260	2,840	2,220	4,730
Siskiyou	7	.....	17	6,144	12	9	2,783	6,713	27,368	28,124
Solano	34	68	70	344	557	456	3,927	200	3,730	506,886
Sonoma	6	.....	290	285	2,365	395	12,406	2,765	125,371	2,865,427
Stanislaus	.....	.....	.....	.....	50	.....	.....	.....	20,000	181,000
Sutter	12	2	29	975	211	465	275	90	3,250	169,164
Tehama	22	3	20	13	68	23	424	80	111,160	146,290
Trinity	.....	.....	.....	3	25	15	15,000	20,000	46,000	17,000
Tulare	.....	.....	.....	.....	20	18	2,000	1,500	11,000	136,000
Tuolumne	40	1	25	550	70	40	300	3,000	290,000	525,000
Yolo	4	11	67	100,150	885	180	200	120	8,500	230,000
Yuba	43	33	35	2,000	330	550	3,900	59,000	122,000	561,000
Totals	17,281	14,838	6,527	356,053	25,319	15,614	172,783	1,336,048	9,981,575	20,142,000

TABLE OF STATISTICS—Continued.

COUNTIES.	Gallons of wine	Gallons of brandy	Number of horses	Number of mules	Number of asses	Number of cows	Number of calves	Number of beef cattle.	Number of oxen	Total number of neat cattle
Alameda	12,500	2,400	8,464	920	14	4,875	2,050	2,230	480	9,635
Alpine			180	12	4	400	150	100	75	725
Amador	64,800	810	3,600	460	23	2,760	2,050	1,100	320	6,230
Butte	54,780	2,845	5,680	700	86	2,800	2,850	3,000	144	8,794
Calaveras	38,300	910	2,220	200	17	1,400	1,000	2,570	240	5,210
Colusa	73		7,642	600	25	13,890	7,817	4,712	205	26,624
Contra Costa	59,838		6,300	402	38	5,907	3,894	2,875	203	12,883
Del Norte			612	80	2	675	586	1,121	121	2,503
El Dorado	159,530	7,375	2,680	314	42	2,650	2,100	1,790	435	6,975
Fresno			2,975	240	70	14,334	7,260	2,559	266	24,819
Humboldt			4,671	742	13	6,003	5,235	2,504	571	14,313
Inyo			1,247	176	90	287	211	1,280	286	2,064
Kern			3,550	164	118	7,023	6,000	10,000	439	23,462
Klamath	300		340	419	10	462	410	832	80	1,784
Lake			1,955	115	6	1,398	1,488	576	169	3,631
Lassen			1,375	83	2	800	1,492	1,500	250	4,042
Los Angeles	760,000	77,000	12,000	2,000	200	2,000	2,070	7,000	560	12,530
Marin	1,500		2,560	126	6	14,579	2,135	2,850	687	20,250
Mariposa	3,967		1,612	280	96	1,517	1,517	3,100	402	6,536
Mendocino			10,000	2,000	20	5,000	4,000	6,000	700	15,700
Merced	14,000	1,000	2,874	236	44	19,915	7,585	2,148	19	29,667

Mono	.....	.....	661	44	24	576	513	137	339	1,565
Monterey	2,000	400	5,038	271	11	3,844	2,411	8,417	97	14,769
Napa	113,000	12,050	4,930	318	30	2,772	2,355	2,545	148	7,820
Nevada	13,500	1,200	2,150	175	4	1,475	250	900	624	3,249
Placer	39,500	4,670	2,370	325	11	1,240	970	840	370	3,420
Plumas	.....	.....	1,528	201	20	1,626	1,300	2,648	236	5,810
Sacramento	56,180	2,568	7,300	1,400	32	5,873	3,836	2,042	329	12,080
San Bernardino	40,635	3,340	3,219	368	40	2,435	2,250	1,071	212	5,968
San Diego	2,820	.....	4,275	474	46	1,200	1,200	18,844	243	21,487
San Francisco	.....	.....	8,100	200	.....	3,130	85	60	45	3,320
San Joaquin	20,000	800	11,675	972	12	4,500	3,200	9,761	326	17,787
San Luis Obispo	.....	.....	900	167	30	2,600	861	55	59	3,575
San Mateo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	16,800	500	4,093	218	47	6,869	1,920	2,642	160	11,592
Santa Clara	37,100	9,550	9,512	670	10	5,810	3,930	9,036	311	19,087
Santa Cruz	8,100	.....	1,543	95	4	1,600	1,372	1,715	341	5,028
Shasta	7,020	1,940	1,437	1,760	18	2,040	1,356	1,488	502	5,386
Sierra	700	.....	418	102	33	743	653	876	264	2,536
Siskiyou	2,100	.....	4,947	823	35	2,984	1,369	13,370	387	18,110
Solano	49,697	14,340	3,620	640	6	2,850	2,006	1,612	83	6,551
Sonoma	176,347	4,454	10,502	854	39	9,972	8,405	8,418	442	27,237
Stanislaus	10,000	900	6,136	620	40	3,412	3,008	4,000	.....	10,420
Sutter	10,145	4,856	4,192	436	16	2,653	1,771	1,589	210	6,223
Tehama	8,000	300	4,122	347	5	4,000	2,000	800	70	6,870
Trinity	.....	200	500	170	8	700	500	650	170	2,020
Tulare	.....	.....	6,700	310	25	2,125	37,239	1,693	442	41,499
Tuolumne	42,260	1,043	1,450	150	76	1,600	1,070	770	180	3,620
Yolo	20,000	3,378	7,190	930	26	2,330	1,365	1,945	170	5,810
Yuba	33,300	4,210	1,800	500	42	1,830	1,160	2,010	160	5,160
Totals	1,884,792	163,031	209,847	24,009	1,616	186,364	150,259	159,781	13,072	503,046

TABLE OF STATISTICS — Continued.

COUNTIES.	Number of sheep	Number of Cashmere and Angora goats	Number of hogs	Number of chickens	Number of turkeys	Number of geese	Number of ducks	Number of hives of bees.
Alameda	55,700		9,000	289,000	8,200	3,600	14,000	783
Alpine	300	30	250	500	100		25	28
Amador	7,600	125	3,500	15,000	2,000	1,000	1,100	602
Butte	64,000	39	14,500	230,000	4,000	300	700	1,760
Calaveras	9,000	3,120	6,000	11,000	400	400	600	327
Colusa	150,000		32,600	28,000	3,250	175	900	1,805
Contra Costa	101,228	16	17,800	20,358	9,000	858	1,378	1,205
Del Norte	1,306		1,709	1,524	37	42	135	144
El Dorado	5,000	430	4,000	15,000	850	400	300	950
Fresno	62,635	1	7,420	10,330	616	20	728	325
Humboldt	1,125		7,352	11,310	206	215	238	360
Inyo	400		209	1,500	45			3
Kern	40,371		1,300	3,740	370	8	340	40
Klamath	35		732	1,861	12		10	41
Lake	8,999		25,985	23,498	1,149	310	1,698	1,195
Lassen	8,000		762	4,500	750	100	180	13
Los Angeles	148,700		5,000	30,000	1,000	500	2,000	1,500
Marin	425		4,640	850		400	3,000	46
Mariposa	10,720	1,200	6,130	14,300	1,300	180	950	3
Mendocino	27,000		20,000	40,000	2,000	100	2,000	500

Merced	76,589	.....	12,048	9,242	770	110	606	1,200
Mono	.....	.....	449	4,386	51	.....	.....	6
Monterey	139,281	560	6,569	17,500	460	550	920	918
Napa	5,430	.....	8,000	21,900	4,800	240	1,000	650
Nevada	575	.....	3,500	12,500	3,600	400	900	574
Placer	21,000	225	8,000	12,700	1,550	180	635	875
Plumas	540	.....	850	13,400	100	12	134	7
Sacramento	68,000	261	12,000	31,700	6,300	1,300	2,500	1,546
San Bernardino	20,700	2	1,540	6,000	260	130	400	1,075
San Diego	15,623	.....	880	6,000	60	100	100	32
San Francisco	135	.....	3,100	6,875	529	275	3,872	25
San Joaquin	26,762	22	19,300	45,000	10,000	950	6,000	1,665
San Luis Obispo	70,000	.....	1,200	9,000	400	40	100	360
San Mateo	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	138,500	3	750	1,200	600	122	670	300
Santa Clara	26,055	45	9,150	97,000	2,500	1,800	7,300	1,545
Santa Cruz	560	202	2,675	10,000	261	250	304	467
Shasta	20,480	.....	12,301	15,640	4,320	239	543	398
Sierra	.....	.....	753	5,210	211	63	246	52
Siskiyou	15,373	.....	6,392	19,741	733	324	496	309
Solano	40,332	3	10,224	9,220	1,525	440	1,099	248
Sonoma	33,255	139	25,952	43,934	2,953	4,611	4,634	366
Stanislaus	167,000	700	30,000	65,000	20,000	2,700	4,000	1,940
Sutter	18,263	.....	11,670	3,400	20,500	500	2,800	1,483
Tehama	119,000	40	9,500	18,000	4,000	100	200	430
Trinity	220	15	800	8,500	250	110	50	380
Tulare	52,000	201	16,350	117,000	9,300	108	6,800	1,580
Tuolumne	6,000	.....	10,000	12,000	1,500	150	1,000	256
Yolo	36,450	15	12,865	61,200	13,210	524	1,098	1,006
Yuba	13,000	19	6,800	25,000	11,200	600	2,600	1,444
Totals	1,833,667	7,413	412,507	1,459,069	157,228	25,537	81,289	32,767

TABLE OF STATISTICS—Continued.

COUNTIES.	GRIST MILLS.				Barrels of flour made....	Bushels of corn ground..	SAW MILLS.		Feet of lumber sawed....	No. of shingles made....
	Steam power...	Run of stone...	Water power...	Run of stone...			Steam power...	Water power...		
Alameda	5	18	2	2	33,450	5,675	3	.....	.....	.....
Alpine	.....	.....	.....	.....	.....	.....	3	5	500,000	500,000
Amador	1	2	2	3	4,500	2,500	5	1	4,250,000	1,000,000
Butte	1	4	3	7	76,000	30,000	11	8	9,000,000	600,000
Calaveras	.....	.....	.....	.....	.....	.....	7	6	3,650,000	200,000
Colusa	2	3	.....	.....	16,000	300	2	.....	180,000	.....
Contra Costa	3	11	.....	.....	40,000	6,000	.....	.....	.....	.....
Del Norte	1	1	1	1	1,150	.....	2	2	440,000	.....
El Dórado	1	2	1	1	5,050	5,000	13	10	10,000,000	110,000
Fresno	.....	.....	1	2	80	1,000	1	4	970,000	50,000
Humboldt	2	2	1	1	1,950	670	6	3	20,375,000	800,000
Inyo	.....	.....	1	2	1,100	100	1	1	100,000	60,000
Kern	.....	.....	1	1	500	.....	4	.....	1,762,500	.....
Klamath	.....	.....	2	2	.....	200	1	5	1,604,746	No estimate.
Lake	.....	.....	2	5	14,225	2,000	3	3	1,650,000	600,000
Lassen	.....	.....	2	2	12,000	80	1	4	1,000,000	100,000
Los Angeles	.....	.....	5	10	6,700	10,000	1	.....	.....	.....
Marin	.....	.....	.....	.....	.....	.....	1	.....	300,000	89,000
Mariposa	.....	.....	.....	.....	.....	.....	7	.....	2,000,000	400,000
Mendocino	2	3	2	3	10,000	1,000	9	6	50,000,000	1,000,000

Merced			3	9	5,000	4,000				
Mono			1	1			1	3	440,000	300,000
Monterey	1	2	1	1	1,000					
Napa	2	5	2	3	31,400	11,000	3	1	450,000	90,000
Nevada	1	4			12,000	4,000	29	4	10,000,000	
Placer	1	2					13	5	13,000,000	1,100,000
Plumas			1	2	1,800	50	3	14	1,800,000	
Sacramento	4	14	1	2	175,000	25,000	2		Re-sawing.	
San Bernardino			2	4	8,000	3,000	3	1	1,700,000	800,000
San Diego			1	1	800	100				
San Francisco	11	42			410,400	9,867	8		14,510,000	
San Joaquin	6	17			100,000	8,400				
San Luis Obispo			2	2			2		950,000	
San Mateo										
Santa Barbara	1									
Santa Clara	7	20	3	10	198,000	300	3	4	2,600,000	790,000
Santa Cruz	2	5	3	6	14,004	3,328	12	9	12,346,000	96,000,000
Shasta			2	4	5,390	4,000		13	23,502,967	
Sierra							13	16	6,780,000	
Siskiyou	2	12	5	8	18,300	2,300	2	6	3,800,000	1,300,000
Solano	2	5			22,300	790				
Sonoma	8	11	2	3	49,640	4,000	13	4	13,425,000	3,362,000
Stanislaus	1	3	2	5	13,824	880				
Sutter										
Tehama			3	9	27,000	2,000		2	300,000	500,000
Trinity			1	2	1,800	100	1	13	1,430,000	46,000
Tulare	1	3	2	4	12,250	2,000	1	2		10,000
Tuolumne			2	4	5,800		6	2	1,650,000	1,200,000
Yolo	2	5	1	2	31,000	700				
Yuba	2	9	1	2	33,200	16,440	11	4	4,525,000	
Totals	62	205	67	116	1,400,413	166,780	207	161	220,991,213	108,007,000

TABLE OF STATISTICS—Continued.

COUNTIES.	QUARTZ MILLS.		MINING DITCHES.			IRRIGATING DITCHES.		WOOLLEN MILLS.		COTTON MILLS.		COAL.	RAILROADS	
	Number.....	Tons crushed.....	Number.....	Miles in length...	Amount of water used per day—inches.....	Number.....	Acres irrigated...	Number.....	Pounds of wool used.....	Number	Pounds of cotton used.....	Tons mined.....	Number.....	Miles in length...
Alameda										1			3	29¾
Alpine	3					10	500							
Amador	31	100,000	47	418	5,718	48	1,335					200		
Butte	17	4,250	30	163	38,350	37	2,042						1	13½
Calaveras	32	14,900	20	491	4,960	9	185							
Colusa														
Contra Costa												60,150	3	15
Del Norte			11	24	2,850	2	190							
El Dorado	30	16,700	54	845	6,720	27	1,831						2	18¼
Fresno	2	210												
Humboldt													1	2
Inyo	5		1	6	40	5	2,000							
Kern	14	25,100	6	13	2,600	22	1,500							
Klamath	4	3,000	62	74	14,122	25	406						1	2
Lake						1	500							
Lassen														
Los Angeles	2	600	3	14	456	41	10,000							
Marin														
Mariposa	36	11,600	10	69	4,600	60	180							
Mendocino														

Merced						2	2,000	1						
Mono	3	255	1	6	300	2	2,000							
Monterey														
Napa													1	18
Nevada	72	125,000	52	875		20							1	31¼
Placer	12	2,760	36	379	14,900	3	80						4	113¼
Plumas	16	40,000	73	197	24,575	33	2,420							
Sacramento				28¾	5,000			1						58
SanBernardino	2					35	6,000							
San Diego	1													
San Francisco								3	3,000,000				7	30
San Joaquin						2	3,000							
SanLuisObispo														
San Mateo														
Santa Barbara							1,500							
Santa Clara													2	25½
Santa Cruz														
Shasta	5	1,785	60	296	12,426	78	4,169					12		
Sierra	19	20,000	32	134	12,000	15	219							
Siskiyou	4	200	15	230	3,800	8	650							
Solano													1	16
Sonoma													1	3½
Stanislaus			2	10	500	1	150							
Sutter														
Tehama			1	7	160	33	490							
Trinity	1		131	377	45,259	84	1,276							
Tulare	2					100	3,000							
Tuolumne	39	13,120	210	7,210	7,400		1,500							
Yolo						2	21,000							
Yuba	9	12,000	17	85½	5,200	15	465	1	125,000				2	25
Totals	360	391,480	874	11,949¼	711,936	720	70,588	6	3,125,000			60,362	30	400½

TABLE OF STATISTICS—Continued.

COUNTIES.	ASSESSED VALUE OF PROPERTY.				Estimated total population	Registered voters	Poll tax collected
	Real estate	Improvements	Personal property	Total valuation			
Alameda	$7,160,314		$1,563,262	$8,723,575	17,018	3,473	7,772
Alpine	258,675		119,434	378,109	509	352	277
Amador	366,125	$1,578,652	950,041	2,894,818	12,285	2,540	2,158
Butte	976,913	807,729	2,173,906	3,958,548	13,003	2,392	3,307
Calaveras	721,641		547,542	1,269,183	10,230	2,079	2,160
Colusa	958,271		1,734,236	2,692,507	8,000	1,525	1,368
Contra Costa	1,737,216	205,087	1,490,557	3,432,860	9,300	2,560	1,240
Del Norte	53,260	12,000	349,860	415,120	1,475	366	526
El Dorado	271,423	1,035,380	1,274,042	2,580,845	9,645	3,557	6,821
Fresno	182,621	63,095	963,882	1,209,598	1,764	569	377
Humboldt	314,795	184,990	897,365	1,397,150	5,436	1,359	834
Inyo	80,687		131,508	212,195	560	325	140
Kern	340,641	185,480	695,525	1,221,646	3,000	849	
Klamath	138,349		215,564	353,913	2,900	366	624
Lake	90,867	139,562	333,233	563,662	4,000	853	1,080
Lassen	239,585		291,222	530,807	1,500	365	342
Los Angeles	1,142,830		1,139,221	2,882,051	9,500	2,300	1,000
Marin	1,802,277		911,567	2,713,844	5,890	1,465	2,520
Mariposa	408,475	415,920	465,635	1,290,030	6,000	1,617	1,092
Mendocino	478,856	179,550	1,460,584	2,118,990	8,000	1,560	1,300

Merced	233,612	114,765	884,885	1,233,262	2,070	414	295
Mono	34,710	92,075	122,580	249,365	500	351	210
Monterey	559,848	167,229	698,594	1,425,671	6,050	1,147	1,558
Napa	2,657,812		1,273,852	3,931,664	9,465	1,933	2,320
Nevada	3,151,463		2,873,172	6,024,635	20,000	6,250	8,582
Placer	417,265	1,763,865	2,102,079	4,283,209	14,300	1,780	5,051
Plumas	296,995	481,586	706,939	1,485,520	6,000	1,661	3,454
Sacramento	4,629,518	491,860	4,568,543	9,689,921	20,000	7,733	8,601
San Bernardino	283,584		442,240	725,824	4,896	968	562
San Diego					3,000	471	
San Francisco	65,452,965		41,027,202	106,480,167	140,000	24,112	44,660
San Joaquin	2,579,510	1,571,240	2,369,695	6,520,445	22,000	4,679	2,748
San Luis Obispo	111,690	66,020	311,121	488,831	2,950	590	268
San Mateo							
Santa Barbara	404,476	204,723	476,060	1,085,259	6,200	892	550
Santa Clara	4,600,048	3,461,900	2,510,879	10,572,827	24,000	6,200	11,000
Santa Cruz	852,608	557,440	815,665	2,225,713	7,750	1,784	2,584
Shasta	337,393		618,592	955,985	5,100	1,634	2,180
Sierra	529,352	99,610	1,010,134	1,639,096	5,000	2,677	2,079
Siskiyou	620,518		1,225,419	1,845,937	8,000	2,373	5,589
Solano	1,938,986	806,528	1,509,424	4,254,938	14,425	2,776	2,814
Sonoma	3,314,153	225,792	2,497,127	6,037,072	22,367	5,238	6,184
Stanislaus	560,852	360,468	687,804	1,609,124	3,644	1,168	1,000
Sutter	518,687	334,542	842,308	1,695,537	4,580	1,339	1,987
Tehama	439,874	194,345	495,619	1,129,838	4,590	954	1,238
Trinity	80,512	191,349	419,367	691,228	3,624	990	1,884
Tulare	500,737		1,280,449	1,781,186	7,200	1,300	
Tuolumne	490,809	38,600	490,420	1,019,829	5,811	2,144	
Yolo	1,212,163	419,756	1,334,870	2,966,789	8,974	2,220	3,802
Yuba	486,290	1,144,175	2,114,378	3,744,823	8,000	3,192	5,055
Totals	$114,219,251	$17,595,313	$94,218,034	$226,033,098	520,802	121,442	

TABLE OF STATISTICS—Continued.

Yield of quicksilver, per month.

Counties.	Pounds.
Santa Clara	161,250
Lake	55,000
Total	216,250

In Santa Cruz County the California Powder Works manufactured the following amount, in eighteen hundred and sixty-seven:

Description.	Pounds.
Blasting powder	3,804,925
Cannon, musket and sporting powder	181,737

A fuse factory is being built and paper mills are in operation. One hundred thousand barrels of lime and two hundred thousand dollars worth of leather were made in the county during the year.

One powder mill and one paper mill in operation in Marin County.

TRANSACTIONS

OF THE

STATE AGRICULTURAL SOCIETY

FOR THE YEAR 1869.

STATE BOARD OF AGRICULTURE FOR 1869.

PRESIDENT.

CHARLES F. REED ..... Grafton, Yolo County.

DIRECTORS.

C. H. Ross ..... Sacramento.
T. L. Chamberlain ..... Placer.
William P. Coleman ..... Sacramento.
H. M. Larue ..... Sacramento.
H. R. Covey ..... San Francisco.
R. S. Carey ..... Yolo.
C. T. Wheeler ..... Sacramento.
Edgar Mills ..... Sacramento.
Robert Hamilton ..... Sacramento.

OFFICERS OF THE BOARD.

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Chemist and Metallurgist ..... Dr. R. Oxland, F. C. S., San Francisco.
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Meteorologist ..... T. M. Logan, M. D., Sacramento.
Zoologist and Entomologist ..... H. W. Harkness, M. D., Sacramento.
Botanists ..... A. Kellogg, M. D., San Francisco; Prof. H. N. Bolander, San Francisco.

OPENING ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER SEVENTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By CHAS. F. REED, President.

Gentlemen and Ladies, and Members of the State Agricultural Society:

Having occupied this position, and addressed you from this same stand upon the subject of agriculture, on so many occasions like the present, I feel almost at a loss what to say that can interest you or that will be appropriate to the occasion. On an ordinary occasion, with no new events to record, with no great achievements accomplished, with no grand marches toward prosperity, permanent and lasting, for our State, I feel that I might well be excused from saying anything to you to-night, except, perhaps, to greet you with congratulations upon the general prosperity of our people, and might be content to remain a silent looker-on where there is so much to be seen and learned. But the present occasion is no ordinary one for our State. The history of California from its very beginning is pregnant with grand events. To say nothing of the commercial and monetary revolutions, extending throughout the world, which have been brought about by the discovery of her mines of precious metals—of her jingling gold and silver coin having taken the place of intrinsically worthless paper in all the great money exchanges—to say nothing of the liberality with which she poured out that gold and silver in the interest of suffering humanity, when her country's defenders needed her assistance—to say nothing of the crowns of glory with which her name will ever be encircled, in consequence of the noble deeds of her sons on the great battlefield of liberty, both on land and sea—to say nothing of the valuable discoveries in science, of the great improvements in mechanics and the arts, for which the world is indebted to her—to say nothing of the explosion of old and erroneous theories in political economy, and the adoption of new and correct ones, which she has occasioned in all the civilized Governments of the earth—to say nothing of her achievements in agriculture, of her supplying the grain marts of the world with wheat superior to that of all other countries, of the immense quantities and superior excellence of her fruits, embracing

the most valuable varieties of all the climates, of her extensive vineyards and promising wines, of the magnitude of her mulberry plantations and the superior excellence and richness of her silks—to say nothing of all these and many other subjects which go to make up the grand record in honor of California as a State, still the present occasion is one of which we, as citizens of California, as farmers, mechanics, artisans and laboring men and women, may all well be proud.

For the last seven years we have each and every one of us been contributing of our means to the accomplishment of one of the boldest undertakings, one of the grandest achievements the world has ever known; and this year has witnessed the final completion of that great undertaking. We have, on a former occasion, appropriately celebrated the great event.

I need not say I refer to the completion of the Pacific Railroad—the connecting link which binds with an iron band the two extremes of our noble country together. By this road, not only the East and the West, but the North and the South, are made one. Politically speaking, of many countries, of many conflicting interests, of many people, this road has made one—while heretofore we have felt and acted as citizens of many States, with conflicting and apparently unreconcilable interests. Now we all begin to feel that we are citizens of one common country, with interests and objects identical. Hereafter, the Pacific and the Atlantic, the Gulf of Mexico and the lakes, bound one common country and surround one common people—a country which has no equal, geographically, physically, morally or politically—a people, comparatively speaking, at least worthy of the country they possess.

But we are here to consider the material interests of California, and while this road is so important to the nation as a whole, if properly managed its importance to California cannot be overestimated. With cheap fares, it will make California the high road of the travelling world; with cheap freights, it will become the means of transportation of the richest commerce the world has ever seen. It will stimulate our agriculture, and make our State what in respect to soil, location and climate she is capable of being—the Garden of Eden of modern times. It will be the means of reclaiming that vast region of country lying between the Rocky and Sierra ranges of mountains from a vast trackless and valueless desert, making a rich, fertile country, dotted with thriving towns and cities, and teeming with a countless and industrious population. It will make of our tradesmen, in reality, merchant princes. It will make our principal towns and cities the banks and centres of exchange for all the commercial countries of the globe.

These things can only be brought about by a liberal policy in the management of the road—a policy as liberal and enlightened as the enterprise is grand and magnificent. With such a policy, a few years will suffice to make this road the grand trunk to which other roads, branching in every direction, and spanning the continent north and south, will become contributary. As we Californians are all, in one sense, stockholders in this grand highway, we have a right to expect and demand that its management shall be shaped with reference to the accomplishment of these most desirable objects.

Hence it becomes proper, on occasions like the present, when we come together, to bring the evidences of our prosperity, and while counting up the advantages of our State and country, to consider whether we are reaping all the benefits we might, from the circumstances which surround us. Particularly on this occasion is it proper to consult as to

whether the agricultural interests of the State are being conducted in a manner to secure the greatest benefits from the advantageous circumstances with which we are surrounded.

Our geographical situation is all that could be desired to enable us to make the most of whatever we may produce by exchanges with other peoples and other countries. When we look out across the continent, from our very doors to the shores of the Atlantic, we find a people anxious to buy for cash the surplus of nearly everything we can produce. The miners of Nevada want of our surplus wheat, barley, corn, potatoes, beans, fruits, wines, woollen goods, etc., etc., and in exchange they give us their gold and silver. The extreme East and the old West are asking for our fruits, our wines, our silks, our leather; in fact, everything we have to sell finds a ready market at remunerative prices all along this great thoroughfare, from the commencement of our own foot-hills to the extreme borders of the continent. In fact, the people beyond the Atlantic are urging us to enter largely into the production of the raw silk and silk seed, to supply the demand for their consumption, which is millions of dollars' worth annually. If we look out at the Golden Gate, into and across the Pacific Ocean—to say nothing of our advantageous commercial relations already existing with the countries along the coast, both north and south—to say nothing of the numerous islands and the whaling fleets which look to us for their supplies—we see the vast myriads of Asia, with their heretofore exclusion walls broken down, and their ports thrown open, inviting us to the enjoyment of a commerce rich beyond precedent, and which, if judiciously nursed and cultivated, cannot fail to secure to us advantages attainable by no other State or country.

Surrounded, as we thus are, by so many advantageous circumstances, it becomes us seriously and searchingly to inquire how we may best prepare ourselves for securing, in the greatest degree, the benefits they offer. What shall we cultivate—what shall we produce, to enable us to supply all these various demands to the best advantage? We possess so many varieties of soil, so many varieties and conditions of climate, that our natural capacities for production are almost as varied and extensive as the demands upon us.

Viewing all the circumstances which surround us, and which go to make us what we are, what should be our policy in reference to the agriculture of our State? That policy, in my opinion, is plain and easy to be determined. Our public domain, our lands in general, should be divided up into small farms or parcels, each one of these to become the home and homestead of a family, dependent for a livelihood upon the cultivation of that homestead.

Since the organization of our State, the greatest drawback upon our prosperity has been in this very land question. Through the unfortunate management of our General Government, the baneful system of Spain in the disposition of her public domain was entailed upon us, and Spanish grants, valid and invalid, real and spurious, covered a large portion of our best agricultural lands throughout the State. Time and other circumstances have in a measure worn away the effects of this system, but in its place has sprung up another, equally detrimental to our prosperity.

I refer to the accumulation of our lands in the hands of corporations and wealthy individuals for speculative purposes. Thousands of acres of

land, in all desirable portions of the State, which but two years ago could have been bought of the Government or the State for from one dollar to one dollar and a quarter per acre, cannot now be bought for less than from ten to fifteen dollars per acre. What is the result? Immigration to the State is checked, the settlement and improvement of our vacant lands is slow and uncertain, and consequently, the prosperity of the State is held in abeyance.

The question here arises, can this evil be abated or remedied? It is true that individuals and corporations have the right to invest their means in lands, and to hold them for their price, and the Government has no right directly to interfere.

Yet we believe the State can of right and ought, in justice to herself and to small landholders who live upon and cultivate their lands, reach, and to a great extent remedy the evil.

If you or I own and cultivate one hundred and sixty acres of land, which we hold worth fifty dollars per acre—when the Assessor comes around he values that land at fifty dollars per acre, and we have to pay the taxes upon that valuation. Not so with these large land holders. They generally manage to have their lands valued at what they cost them, and not what they sell them at. This is wrong, and unjust to other taxpayers, and a fraud upon the treasury of the State, and it lies in the power of the Legislature to remedy the evil—and the remedy should be applied.

The prosperity, certain and lasting, of our agriculture, lies in the variety of productions equal to the variety of our capacity and the demand upon us.

Let our lands be divided up into small farms, and we insure that variety of production, and consequently, that certain and permanent prosperity.

The production of wheat, though remunerative for the last few years, is liable to be followed to that extent that it may become an injury to the State. The continued cultivation of wheat upon lands, from year to year, exhausts the soil, and in the end impoverishes the producer. Again, if the farmers of the State depend upon the wheat crop too exclusively, a failure of that crop for a few successive seasons bankrupts the farming interest and stagnates the entire business of the State. We have had experience in this respect, and that experience ought to teach us a lesson for the future.

Experiments in the production of new articles of agricultural industry, in different portions of the State, show conclusively what might be added to our general prosperity if the production of these articles should become general. Thousands of dollars per acre are being realized annually by a few gentlemen in Los Angeles County, from orange and lemon orchards only seven or eight years of age; and yet the number of oranges they produce is a mere drop in the bucket when compared to the number consumed in this State. Experiments in other portions of the State show conclusively that these fruits can be raised in other localities as successfully and in as great perfection as in Los Angeles. Evidences of this fact have been exhibited at the State fair for years past, from Butte and Sacramento Counties; and within a stone's throw from where we now stand, the luscious fruit, in full perfection, is annually plucked from the trees. Why, then, should not California not only supply her own demand for these fruits, but ship to her sister States what they may need? Experiments in shipping certain varieties of grapes and other fruits to the Atlantic States, on the railroad, are proving not

only successful, but highly remunerative. Let these varieties be sought out and cultivated, and we have here opened up a market that cannot be glutted by a few wagon loads, but will continue to grow in proportion as the people East learn the richness and delicacy of our California fruits.

Experiments in tea culture, now being made in El Dorado County by a large company of Japanese, who have immigrated to our State for that purpose within the last year, are giving evidence of success beyond all expectation. The plants, set out under most disadvantageous circumstances, late in the season, are growing much better than in Japan, and the question of the successful production of tea in all our foot-hills is fully settled already, the only question remaining to be decided being the quality of the tea produced, and the experiment, so far, gives good indication of a favorable answer to this question.

The production of beet sugar has been entered upon in good earnest by a company of capitalists, near this city, and bids fair to become one of the permanent and profitable industries of the State. The fact that California annually pays for sugars and molasses, imported, over four million dollars, makes their undertaking one of great interest, and the success of the enterprise will be hailed as a new era in the agriculture of the State.

The culture of silk is another new industry of great moment to the State. The people of the United States pay annually for the silk worn by them over seventy millions of dollars, and these silks are all the products of foreign countries. In connection with this fact, how significant, how immensely valuable become the unmistakable evidences of the certain success of this industry in our State, presented to our eyes in the grand exhibition of cocoons in this hall to-night. A few years since, our Legislature, recognizing the importance of the introduction of this industry into our State, passed an Act offering liberal premiums for the production of mulberry trees and cocoons within a certain number of years from the date of that Act. Accepting the promise of the State as having been made in good faith, a number of enterprising individuals entered into the tree and silk culture in good earnest, and the result is that they now have and will have demands against the State to the amount, in the aggregate, of from twenty-five thousand dollars to thirty thousand dollars, while the value to the State of their enterprises—proving, as they have done, that California has not a rival in the world in the successful cultivation of this rich and beautiful product—cannot be measured by millions. Under such circumstances, the faith of the State having been pledged, it should be honestly redeemed. "The promise having been made, must be kept."

I cannot, in justice to this society, and in justice to the memory of the dead, leave this subject without bearing testimony in a humble way to the value of the services to this State of the father of this industry in California—the late Louis Prevost.

Prevost was a Frenchman by birth. He left his native land and came to this country because he loved our republican institutions. Settling in Long Island (New York), he engaged in the nursery business. In eighteen hundred and forty-nine he came to this State, and early engaged in the same business in San José.

In August, eighteen hundred and fifty-six, a committee of this society visited the place of Prevost, and in their report use the following language:

"The committee cannot pass the garden of Prevost without a par-

ticular notice of his efforts to introduce into our State the cultivation of the mulberry, and we may safely say he is the pioneer in this new work of silk raising. The committee most warmly commend this enterprise; and in noticing this fine plantation of over twenty-five thousand mulberry trees, they feel that at least a just and appreciating notice of his laudable exertions is due to him at the hands of the Visiting Committee."

Thus it will be seen that for thirteen years at least Prevost labored disinterestedly and, as we all know, faithfully, to introduce into our State his favorite industry. Of late years, every dollar of his money and almost every moment of his time was devoted to this cause. Members of this society and visitors of the State fairs will miss his cheerful presence and his simple but enthusiastic representations of the value to the State that the cultivation of silk would one day become. While we miss him, let us not forget his services.

These annual fairs of our State society have come to be regarded by our citizens in all portions of the State as a general holiday—a day of enjoyment and recreation. We are apt to forget the real objects of the fair—the real lessons the annual exhibition of the evidences of our progress are intended to inculcate. Let us not throw away the occasion, but note the improvements that are being made from year to year, and see whether we cannot in turn, within the next year, produce something worthy of a place in the next exhibition. Let us strive to make these exhibitions worthy of the name our State has attained. When we each of us do this we shall not feel like apologizing to our visitors for the meager display in this or that department of our exhibitions. In the name of the society, I invite each and all to an examination of the articles we here see spread out before us.

To our visitors from abroad I extend a hearty greeting, and give you the right hand of fellowship of the society. It will be my pleasure, and the pleasure of every member of the Board of Managers, to extend to you such attentions and such hospitalities as the occasion and the performance of our several duties will permit.

We hope, now that the distance between the Pacific and Atlantic States has in a measure been annihilated, to become better acquainted and more neighborly, and to receive and return not only personal visits, but to interchange the products of our several States on the occasions of our annual fairs.

Hoping that the week's entertainment may prove agreeable and beneficial, and that the exhibition may incite all to renewed exertions in the future, I return my sincere thanks for the respectful attention you have given me, and again extend to you a hearty welcome to the enjoyments of the occasion.

REMARKS OF SENATOR J. W. NYE.

At the conclusion of President Reed's address, he introduced Senator J. W. Nye, who delivered a few remarks, which were listened to with much interest and attention. He said he had been invited by the President of the society to be present, but had not expected to be called upon to say anything. He said he could not, however, help mingling his congratulations with his hearers upon the success of the present fair. Twenty years ago, there was no Agricultural Society here, and no agriculture worth speaking of. He rejoiced with the citizens of California at the wonderful success they had achieved in the various agricultural and industrial pursuits. They literally sat under their own vines and fig trees, and had none to make them afraid. If such progress had been made during the past twenty years, who could predict the advance that would be made in the next twenty years? If all the oceans that surround the United States were to dry up and be transformed to rock, there was not a single article of common necessity—nay, even of luxury—which the United States could not produce within her borders. He expected to see, at no distant day—or rather, he expected younger men than himself to see—almost the entire trade of the Indies, that great trade for which the world has struggled for fourteen centuries, carried with mighty velocity and irresistible power across this continent, and our country the mistress of the sea and the master of the commerce of the world. It was a fact in political economy, in the history of the world, that whatever burdens a nation might entail upon herself, the earth, the teeming earth, must pay the debt. He was present at the California State fair eight years ago, and the present exhibition, contrasted with that of that period, spoke most favorably of the progress made during the interval. He concluded by commending the zeal and wisdom of the President of the society.

ANNUAL ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER NINTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Hon. EDWARD TOMPKINS.

Mr. President, Gentlemen of the State Agricultural Society, Ladies and Gentlemen:

"The State Fair of eighteen hundred and sixty-nine is California's opportunity," said one of the leading papers of the State (the Sacramento *Union*), in a recent suggestive and thoughtful article, and the ideas therein advanced have furnished me the basis for what I am to say this evening.

California—who is she? Opportunity—for what? Nineteen years ago this day a new State was born in the American Union. Everywhere her advent was greeted with a most cordial welcome. Friends from every State and from every land gathered about her, strong arms encompassed her, brave hearts at once took charge of her interest and her destiny, the plains were covered with endless caravans of hardy adventurers coming to engage in her service, the ocean gleamed with the white wings of commerce wafting its tributes to her feet. Every land gathered up of its courage and energy the choicest to send her, and the islands of the sea poured out without limit or restraint their tribute also. And as her name and fame spread from nation to nation, a new and brighter spirit beamed from every eye, mind was everywhere quickened and developed, hope came back to the desponding; wider range and broader scope was given to intellect, and brighter possibilities and a more brilliant future dawned upon mankind.

Such was the advent of California into the Union, but the crowd who rushed hither knew not the magnitude of the work in which they bore a part. "They builded greater than they knew," and the powers they put in motion were to accomplish results that their imaginations, in their boldest flight, would never have dared to dream of as within the limits of the possible.

Nineteen years have passed, and what have they accomplished? The infant State has developed into an empire. A territory larger than the Eastern and Middle States combined, has been seamed up with roads, dotted with farm houses, explored by science, its golden veins developed and rifled, its buried secrets wrested from its bosom, the plough and the harrow have torn it, and the reaper has swept far and wide over its waving acres—the ships that came laden when everything was wanted,

and went away empty, because there was nothing to spare, now come light because so little is needed, and stream out of the Golden Gate an endless procession of deep-freighted argosies, carrying the treasure that the world covets, and the bread that the hungry demand, and better than all this, law has obtained the supremacy that belongs only to the age when man has learned to control himself—order reigns in the hearts and by the will of the people; the lesson is being learned—alas! it takes centuries and blood to learn it well—that self-government, to be other than a failure, must be at once the most unlimited freedom and the most absolute sovereignty. Everywhere education is fostered, school houses are built, and occupied too, and side by side with them arise on every hand the altars erected to the living God.

With all this prosperity before us and around us, it becomes us now to inquire whence it has come, and to whom we are indebted for it? The answers are already in your hearts. It has come from the God-blessed soil, and it has been developed by the strong arms and the brave hearts of the farmers and miners of California. In golden grain, or in virgin gold, it matters not which, they have wrested wealth, beyond the dream of avarice, from nature's bosom, and sent it forth to enrich and bless the world. Nowhere else has such a mighty influence been exercised, for as that tide of wealth has flowed abroad it has entered and expanded all the channels of business, and all the avenues where capital does its wonderful work. A thousand millions of gold have swelled the coffers of the old States and the old world. Property has been largely increased in value everywhere, and thousands across the continent or the oceans have found themselves enriched by the advance, without ever dreaming that it was the sweat and toil of Californians that was thus spreading, like God's blessing, over the just and the unjust in every land upon which the sun shines.

A thousand millions! Can you comprehend such a sum? Does not the mind falter as it attempts to grasp it? And if its simple statement is so incomprehensible, how shall we bow in humility if we undertake to follow it in its world-developing work? It must not be forgotten that it is never idle. Onward, and ever onward is its law. Used, it is a blessing—unused, it is a curse. Ceaseless activity is its greatest characteristic, and by night and by day it keeps up its eternal march. The rain that the clouds gather, and drop as fast as gathered, where it is most needed, that it may clothe the earth with beauty and with fruit, and then, when that end is accomplished, commence drawing it back from all the little channels where its work of blessing has carried it, that it may again, with full reservoirs, renew its life-giving showers upon the earth beneath, is the type and the representative of that grand circulation of capital that gives life and power to the business world. Through all the avennes of commerce it circulates to the centres that attract it. Accumulated there, as in reservoirs, it invites drafts upon it from all that need. The great manufactory comes and presents its claim, and becomes the means by which a shower of blessings descends upon the thousands that depend upon it for subsistence. Commerce asks a subsidy, and accumulation gladly answers its demands as it whispers to itself, "I scatter but to gather again." Great railroads present their claims, with arguments so irresistible that even cupidity finds its greatest gratification in parting with its hoards to help them onward, and smiles complacently as it remembers that the vast increase of popular wealth that they cause increases also, an hundredfold, the harvest it will reap from the seed it thus sows. And so, through every department of

business and of life, capital, drawn from its great reservoirs, and scattered in showers, commences at once to circulate back, as it had done before, to the place from whence it came, that there it may again be concentrated and sent forth to repeat its work of beneficence in the earth.

It is manifest that just in proportion to the extent of the accumulation will be the magnitude of the enterprises that it will support. The men of hundreds cannot handle millions; the men of millions will not deal in hundreds. When, therefore, California added a thousand millions to the world's wealth, she increased in equal proportions the scope and power of the men who handled that wealth. Have you ever stopped to think that the great merchants and bankers on the Royal Exchange in London, and the Bourse, in Paris, are not only richer but greater men because California has been doing its work in the world? Do you know that in the soil of California has been found the motive power that has driven the locomotive over more than fifty thousand miles of European and American railroads, and furnished the track for its world developing career?

You may not be ready to admit these great facts even now; but see how plain they are: A thousand millions, gathered through twenty years, gives an average of five hundred millions for the whole time. As interest is lost whenever it lies idle, it is the constant study of those who control it to keep it employed. I do not believe that the loss of time in each man's hands will average one week. So far as I can judge, by personal experience, the place that wants it is always waiting when it comes, and the loss of time, as thus measured, is wholly inappreciable. But that we may keep the figures where they will not quite blind us, and not because it is right, I will assume that every man who receives any part of the five hundred millions keeps it idle one month before he uses or invests it, and thus that the whole capital only changes hands twelve times a year. Twelve times five hundred is six thousand, and thus we have an aggregate of six thousand millions of dollars as the amount of new business that could be done each year by reason of this addition to the capital of the world. Had it been withheld to that extent, the world's transactions must have been equally reduced, simply because there was nothing with which they could be carried on.

The thieves that do not commit legal larceny in Wall street, understand this perfectly when they combine and withdraw ten millions from circulation. So readily does business expand to the full limit of the means to do it, that the least diminution of supply at once affects it in all its channels. Ten millions withdrawn is, in that boiling, seething centre, ten millions of operations a day contracted or cut off. But the artificial contraction is discovered only when the business has been done, and the usual means to pay for it are found to be wanting. Instantly there is a foray upon the capital that is wanted for other uses. Increased demand augments the power of the lenders, and the rate of interest is advanced. Weak borrowers can no longer carry the stocks they hold, and they are thrown upon the market and sacrificed. The withdrawn ten millions comes out in time to take advantage of the depression, while, by relieving the market, it causes again the advance which enables it to secure the profits of the villany which has been practiced.

In the light of this illustration, how mighty the part that has been, and is yet performed, by the five hundred millions of California! Six thousand millions a year, for twenty years, is one hundred and twenty thousand millions of transactions, with a month intervening between

every one. Take this amount from the world's business, and where would be the great lines of steamships, railroads and telegraph that within that time have girdled and seamed up the world? Within twenty years the work of previous centuries has been done. Man has been elevated, his powers enlarged, his views and grasp expanded, and his very life quadrupled, because made capable of four times as much usefulness, development and power, as was ever possible before.

I know it is easy to sneer and cavil at the figures made, even by intelligent enthusiasm. But will the doubter tell me, when he must admit that the capital has existed, and that the world's business has, at the same time, been thus enormously developed, where the capital has been lying idle, and what else has produced these great results?

I have not, in this discussion, for one moment lost sight of my question, "Who is California?" I prefer to answer it by her record—by showing what she has done and is doing. Whoever will remember that all her capital, and not merely the average, is now working on in the world's business, and that she is yearly adding from her surplus agricultural and mineral wealth much more than sixty millions more, and then carrying on the figures for the next ten years, by inexorable mathematical law, will arrive at a result that will endanger his reputation for sanity if he shall dare whisper it to any one else, but that will be more than realized in the progress of events.

Whoever has watched the development of the State of New York during the last thirty or forty years cannot fail to remember the persistent courage with which from time to time, as opportunity offered, the distinguished Samuel B. Ruggles has dared to be sneered at for placing before the people the startling figures that measured the coming prosperity of that great State.

It was with him neither idle guessing nor the delusive product of an undisciplined imagination. If to accurately foretell the future belongs to the spirit of prophecy, then "his lips had been touched with a live coal," fresh from the altar of truth. By a process, simple as the fundamental rules of arithmetic, he read what was to be by what was. He said if so many men in ten years, with a given capital, produced certain ascertained results, then twice the number, with double the capital and under the same circumstances will, of necessity, produce twice as much. That was the whole basis of the calculation, and carrying it on for successive periods he thus mapped out the coming development of New York, to be sneered at by the timid and ridiculed by the doubters, and believed by nobody, but to be worked out and demonstrated by the progress of events, to a degree that has proven his calculations to be almost as reliable as the census itself. He had his reward in living to see the prosperity he had predicted, but not in seeing the world ready to believe in and act on his great idea.

"What has been, will be!" Solomon said it thousands of years ago, and even yet we teach our children that he was "the wisest man," because he knew enough to recognize and indorse the great truth. Ruggles echoed it, demonstrated it in advance, and time has proved it again. And yet, with all this evidence, you who are here to-night are wiser than they, and do not believe it with any of that practical faith that will cause you to act on it in your business and your lives. Nay, more—if I should here and now take the measure of your past progress as a guide, and assume that with all your increased facilities, and your

new elements of power, you will yet, each one of you, in the future, continue to do just as much as you have done heretofore, and putting the whole together, with the unanswerable logic of figures should show the results that will be reached in eighteen hundred and seventy, and in eighteen hundred and eighty, and in eighteen hundred and ninety, and in nineteen hundred, you would smile complacently but incredulously, smooth yourself down with the comfortable idea that with all the capacity of Californians in that direction, you are not yet gullible enough to swallow *that*, and as you walked away, would think and speak of it all as "pleasant babbling, such as dreams are made of," and sure to vanish at the first blush of the coming day.

And yet, *it is for your interest* to believe, and to dare to trust this striking lesson of experience. I cannot tell you what California is, and omit the boundless capacity to be—what she is to be hereafter—that is in her. It would be to think only of the little, and omit the great. You cannot do your part in working out her magnificent destiny unless you grow to its full measure yourselves. If I can, in any degree, deepen and strengthen your faith in the permanence, as well as the magnificence of her prosperity, I shall have done more for the agricultural, as well as all other interests in the State, than I could possibly have done by spreading before you in fullest measure, the doubtless extensive knowledge that you expect a lawyer to possess, of soils and crops and the methods by which they are cultivated and produced. Indeed, I have thus far assumed, that in inviting me to address you, you asked for an outside and not an inside view of your great interests, and that if you had wanted to hear of crops or stock, you would have summoned Bidwell, or Beard, or Coombs, or Martin, or Hood, to fill the place I occupy to-night. It is good sometimes to look over our fences, and learn what we can of the world beyond.

I have spoken of the influence California has exercised abroad. At home she has been going through a process of transformation that promises even greater results. Her valleys, for years believed to be worthless, are rapidly becoming the world's granaries. Up the sides of her hills the vine is climbing, and its rich clusters everywhere gladden the eye, and its blood "cheers the heart of man." The olive and the fig, the fruits of Eden, abound everywhere, and even the tree of knowledge of good and evil"—God help us if *all* who have tasted its forbidden fruits in California are to find the gates of Paradise eternally closed against them!

Within the last few years the culture of silk and the industries connected with it have received a great impulse in our State. I look forward to the time when in magnitude and importance it will hardly be second to any other interest, and I should disappoint you and do injustice to my own feelings if I did not pause to place such wreath as I may upon the freshly made grave of the simple-hearted, single-minded, earnest-purposed enthusiast who has done more than all others to infuse knowledge, increase interest and secure the attention of our people to this great source of wealth. Long as silk shall continue to be produced, manufactured and worn, should the name of the unrewarded martyr to its introduction here, Louis Prevost, be held in grateful remembrance by every lover of the best interests of California.

I have not time even to enumerate the many interests that are being fostered and developed by the agriculturists of the State. You know more of them already than I can tell you, but do you also know that by your varied industry you are supplementing the failing gold mines and

carrying the aggregate of production above what it was in their palmiest days? Do you realize, as you read day by day of the sailing of ship after ship laden with agricultural products, that our surplus thus exported already exceeds twenty millions of dollars per annum? For myself, I sit down in wonder before this great fact. Forty dollars each for every man, woman and child in the State, of surplus *agricultural* productions, exported each year to supply the wants of the rest of the world, by a people that but the other day would have starved if their supply ships had had longer voyages than usual, and from a soil that half the world believed to be a desert, until the food it sent them forced the falsehood down their hungry throats. Forty dollars each! To equal it, Great Britain, hugging itself for all it is, and a good deal that it is not, must export fourteen hundred millions per annum, and our brethren on the other side of the continent, who have not entirely got over the idea that we are yet in swaddling bands, must supplement the forty millions that they promise us at the next census with sixteen hundred millions of dollars of annual surplus sent abroad. Add to all this, that nowhere else on God's earth is the quantity consumed at home anywhere near as great as it is with us, that food is so plenty and so cheap that it is used freely and scattered lavishly, so that in all our borders hunger and want are almost unknown, and we have a fact that if it could be put in form to be fully understood by all the laboring classes abroad, and supported by evidence that would secure to it the absolute belief that it deserves, would depopulate those old empires of all the energy or industry that is left in them, and pour it in one mighty flood upon our shores.

Perhaps I have gone as far with these figures as prudence would warrant. The world is never ready to believe any more than it has itself seen, and when new and startling facts are adverse to their interests, their incredulity is precisely equal to the call thus made upon it. But it surely has not escaped your attention that I have made no allusion to the export of gold, precisely as much a surplus product of our industry as our wheat. Taking into the account only the twenty-five million dollars known to be exclusively Californian, and without including a dollar of the nearly equal sums from the States around us, although that is in no small degree the product of California capital and industry, we have the astounding result of ninety dollars a year exported for every soul within our borders. At the same rate, Great Britain would export annually three billion one hundred and fifty million dollars; Illinois, two hundred and fifty million dollars; the State of New York, over three hundred and sixty million dollars; and the whole Atlantic States, three billion six hundred million dollars every year. The figures are right, whether you believe them or not!

What is the result of all this prosperity? Just what you would expect, if you were looking to prove its existence by its fruits. Outside of the haunts of vice in our large cities—even here vice will bear its own crop—where do you see rags or want? Who seeks work, that is fit to work, and cannot find it? Where are the wages of labor so high, and so promptly paid, and in currency so unalloyed and undebased? Where else is every human being so well fed, clothed and housed? Where else is the ring of coin heard in every pocket, as it is here? I hazard nothing in the assertion that there are five persons in California, in proportion to the whole, in what we unjustly call the humble walks of life, that are worth five to twenty thousand dollars each, to one in any other community upon which the sun shines. This universal diffusion of independence, what an anchor and safeguard it is to any people!

But the croakers, doubters and holdbacks of society, although fewer here than elsewhere, are yet not entirely unknown among us, and I hear the significant questions with which they foreshadow the reverses that, whether intending it or not, they do all in their power to create. "How long is all this going to last?" "Everything is too high already—when will the bubble burst?" It will last as long as these birds of ill omen are allowed to croak, without injuring any one but themselves. Nothing that is measured and weighed with gold in the other scale is too high. The bubble will never burst, because it does not exist; but the good ship may sink, if these enemies, in the guise of friends, are allowed to scuttle her, to see if she is not hollow and empty. They will not let out wind, but they may let in water.

Some of you have experienced, all have read about, the recent severe pressure in the money market throughout the State. Because it has furnished a more striking illustration of the sound basis upon which our prosperity rests than any other that I have met with, I will detain you to give it a moment's consideration.

Do you remember a pithy little editorial in the San Francisco *Evening Bulletin*, calling attention to the fact that the National, State and City Governments had, by the operation of circumstances that it seems to me ordinary financial wisdom would have averted, withdrawn from circulation and locked up about fourteen million dollars? The calculation was then made that it was equal to fourteen dollars each for every person this side of the Rocky Mountains, and that the same pro rata withdrawn on the other side would amount to at least five hundred million dollars. No language that I can use can add to the enormity of that statement. We have already seen the effect produced by the withdrawal of ten million dollars in greenbacks from circulation in New York. Panic comes treading in its train, and more than one tall fabric of credit topples down before it. *And yet that is but twenty-five cents each for forty millions of people.* Our Government takes from us fifty-six times as much, proportionally, and not one house failed in San Francisco that could show that it was solvent and ought not to fail. Here was the test of the two systems: Substance against shadow; cash opposed to credit; payment rather than promises to pay; gold in place of paper that promises gold but could not keep its promise.

See, also, how our banks and bankers were affected by it. In New York they had exchanged their own promises with their customers for theirs when they discounted their notes; no money had passed, but the bank had increased its own indebtedness by being a lender. Pressure sends its promises home for payment, and it cannot extend the borrower's note, though it may ultimately be as good as its own. Self-protection is the first law of nature, and they act on it remorselessly. Who shall blame them? It is the system and not the bank that it is in fault.

But the banker in California has loaned money and not promises. He had it, or he could not lend it; and it needs no redemption, for the world knows of nothing more valuable with which to redeem it. As he has no debt rolling in upon him to call for all his resources, he can carry along every borrower that deserves it, until he can, without sacrifice, make his resources available. Thus the community are bound together by mutual interest, and present a front that can never be successfully assailed until they undermine and put it upon a credit foundation themselves. I have had the opportunity to know something of the course pursued by the banks and bankers of California during the late pressure, and severe as it was, I do not believe that any great emergency in

human affairs was ever met by a more liberal, kindly and wise spirit and policy than that adopted and carried out by them. Let the mind that is equal to the consideration of such measureless, boundless ruin, carry out for itself the effect of withdrawing a proportionate sum in New York. Not one business house could go on with its business; not one bank but would be ruined; property would be almost valueless, and bankruptcy and beggary would stalk into almost every home.

There are people in California who would change our system for theirs. It is as if we should take medicine because our friends are sick; as if we, with plenty of good clothing, should go naked because those we love beyond the mountains have lost their wardrobes. When they tell us that, because they having no gold, use the best substitute they can, that, therefore, we should send our gold away also, so as to be no better off than they are, it seems as if old Æsop was a prophet also, and foreknew their existence when he narrated the little bit of natural history touching the wily animal that advised all his friends to part with their tails because he had been so unfortunate as to lose his own. It would, doubtless, have been very kind in them thus to save his feelings, but how disinterested it was in him, may be another question. When they can furnish us a better system in place of one that they are most anxious to get back to themselves, it will be time enough for Californians to even entertain a thought of a change.

The time allowed compels me to hurry through with the answer to my first question. California, then, is the land of the olive and vine, the fig and the mulberry, the orange and lemon, of fruits of every name and kind, matchless in quality and beauty, and unlimited in quantity; of flowers that clothe its hills and valleys with radiance, and fill its air with fragrance almost the entire year; the home of all the cereals, and most of all, that staff of the nations, wheat. Its valleys, exhaustless for centuries; its foot-hills ready to take their place when our farmers shall have learned, as they will learn, that in durability, reliability, variety of production, capacity for irrigation, beauty and healthfulness, they are immeasurably superior to the plains; the home of animal life, where the physical is developed to an elasticity and power of endurance not elsewhere known, and where the progress and power of mind finds the best exponent in the unparalleled results they have produced. Here is a climate that requires no long preparation for its extremes of heat and cold, but leaves all resources to be made available in continuous production and development. The hazards that attend the labor of farmers elsewhere are here unknown. No unexpected rain comes dashing over and destroying the crop that has exhausted a season's labor; no tornado devastates large sections at one fell swoop; the lightning is not attracted to our stacks or our barns, but their owner sleeps in peace, though the mower and reaper may have swept over all his acres the day before. And if—for if there was no drawback, we should be spoiled by unchanging prosperity—the earth is occasionally, in the passage of the years, a little excited beneath our feet, we can yet fall back upon the daily strengthening lessons of experience, that it is because all the powers of nature are here exercised on a grander scale than elsewhere, and that the earthquake is to relieve, not to destroy. The tornado or the lightning do more damage to everything save nerves, in one year, east of the Rocky Mountains, than all that has been caused by earthquakes in California since even its name has been known to the world.

And now, with all these great advantages, and with an already

developed rate of progress that has no parallel, the whole mighty East has stretched its arms across the continent, and linked itself to us by iron bands. The locomotive, the mightiest civilizer the world ever saw, has ploughed its way hither and asserted its imperial rights, that the strictest constructionists do not question, and against which even freemen do not rebel. Only the man that shall have grown as the next ten years will make him grow, can describe the results that are to follow. You are not large enough to hear them, or I to speak them, here and now; you are not ready for the pæans that should and will be sung to the brave, bold heads and hearts that have done the mighty work. It is Napoleonic in its reach and grasp—it is world lifting in its results.

This is the California that is our home. Are we equal to it? A new era is about to dawn upon us; an era of bolder conception and wider grasp than anything we have known before. The world is levelling up. Great men are only those who tower above their fellows, and it is at once a paradox and a fact, that where all are great none are. A commerce such as the world has never know invites us to develop it. Five hundred millions of Orientals, with the accumulated wealth of centuries, are looking us in the face across the Pacific, ready to let us teach them wants and supply them also. And that glorious old ocean, that rolls in placid majesty at our feet, is itself the type of the future in which this new nation is to finish and perfect the empire, that has ever kept its westward way through all the ages. Its star stopped and rested when it reached the Pacific. The largest, the safest, the most variegated, the most beautiful—well might the world's progress be checked and rolled back as it reached these shores.

This occasion furnishes the opportunity to all the world to see California as she is. She needs and asks nothing more. Her varied and matchless climate, her exhaustless resources, her grand possibilities, her ambitious and energetic people, all speak for themselves, and they must be both blind and deaf who do not see the signs and hear the tones that precede and announce the coming glory.

It is for us to be ready. The one great drawback to the growth of California to-day is that her children were not born here. They learned their ideas and formed their habits in other and narrower regions, where the winter's cold pinched and the summer's sun wilted them—where thought ran in grooves of traditional or sectional prejudices, and where the shadow of old institutions, reflected across the Atlantic, kept up the delusion that men can be great by birth, by accident, or by association, rather than by that only mode—the greatness in their own souls. Hence, California is to them a novelty and a wonder, and they do not become so accustomed to the marvels that they daily see as to quite overcome the doubt that earlier and different associations suggest. When she shall have blood relations in all her children the world will be taught to see her and know her *as she is*. This is "California's opportunity" to extend the knowledge of her great resources and prosperity, and to demonstrate that they rest upon so firm a basis that they are not to be impaired or diminished in the future. Let us make the most of it.

REMARKS OF ROBERT HOSEA.

At the conclusion of Mr. Tompkins' address, and after music by the band, C. F. Reed introduced Robert Hosea, of Cincinnati, who spoke as follows:

Ladies and Gentlemen of Sacramento: I am requested, as Chairman of the delegation of merchants and citizens of Cincinnati, to say a few words to-night. I am grateful for the opportunities which have been afforded us. First, the auspicious occasion upon which we arrived in your State—the anniversary of the organization of your State—and the opportunity of hearing the eloquent address which we have heard from the orator of the evening. We have learned more of the statistics of your State than we could certainly have learned in any other way. We have no purpose to subserve in coming among you—I mean to say no business purpose. We have come upon a social, friendly visit. We come to look at the grand things that you have here in California; to take you by the hand and to congratulate you upon the successful completion of the great Pacific and Atlantic railroad, uniting the two oceans together, and the country, we trust, with hooks of steel. The productions of your country are on so extensive a scale that I, for one, had almost expected to find the ladies and gentlemen not of ordinary stature, but rather, as the Scriptures say, as trees walking. Ladies and gentlemen, I take this occasion to thank you on behalf of myself and colleagues for your courteous attention, and hope that we may meet again in our own goodly city, when we can extend to you like hospitality there.

FINANCIAL REPORT

OF THE

STATE AGRICULTURAL SOCIETY

FOR

EIGHTEEN HUNDRED AND SIXTY-NINE.

Date.	On what account.	Amount.
1869.	RECEIPTS.	
February 2	From Robert Allen, per C. T. Wheeler, rent of Park	$400 00
"	From I. N. Hoag, for memberships sold by him..	475 00
Feb. 20.....	From J. Runyon, for membership	500
March 20...	From I. N. Hoag, rent of Park for July and August, 1868	250 60
March 29...	From R. Allen, on account	200 00
June 16.....	From Robert Allen, rent of Park	200 00
July 12.....	From Robert Allen, rent of Park	200 00
August 6...	State appropriation	4,000 00
August 23..	From Chase & Bowley, pool privilege.	1,000 00
Sept. 6.....	Receipts at Park, from Thomas Hall	1,811 25
"	Receipts at Pavilion, from J E. Smith	1,934 50
"	Entries to purses, from Robert Beck	275 00
"	For memberships sold by Beck	250 00
"	For bar privilege at hall	80 00
Sept. 7.....	Receipts at Park, from T. Hall	1,768 20
"	Receipts at Hall, from J. E. Smith	1,619 50
"	Entries to purses, from Beck	375 00
"	Entries to sweepstakes	26 25
Sept. 8.....	Receipts at Park, from T. Hall	2,005 50
"	Receipts at Hall, from J. E. Smith	1,330 50
"	Entries to purses, from Beck	170 00
Sept. 9.....	Receipts at Park, from T. Hall	2,631 50
"	Receipts at Hall, from J. E. Smith	1,317 00
"	Entries to purses, from Beck	190 00
Sept. 10....	Receipts at Park, from T. Hall	1,755 20
"	Receipts at Hall, from J. E. Smith	950 50
"	Entries to purses, from Beck	195 00
Sept. 11....	Receipts at Park, from T. Hall	1,386 50
"	Receeipts at Hall, from J. E. Smith	323 00
"	From Carey, collected at Park	10 00
"	Entries to purses, from Beck	525 00
"	For soda privilege	135 00

Date.	On what account.	Amount.
Sept. 11.....	For cider privilege.....	$52 60
"	From Orphan Asylum, rent of room	25 00
Sept. 13....	From exhibitors, as per drayage and steamer freight bills.....	17 25
October 2..	From R. Allen, rent of Park.....	300 00
October 6..	From California Steam Navigation Company, on freight of engine	20 00
Nov. 29....	From R. Allen, rent of Park, as per bill, by Warrant 148.....	248 95
"	Robert Allen, cash.....	1 05
"	George Schmeizer, gas pipe.....	31 00
	Total	$28,497 85
1869.	DISBURSEMENTS.	
Feb. 20.....	Paid J. Runyon, for 1868.....	$2 00
"	For envelops.....	1 50
"	Expressage on diplomas.....	50
March 22...	George H. Baker, for diplomas, 1868.....	32 40
March 23...	Post-office bill of 1868.....	13 00
March 29...	For trees, setting out and trimming same.....	50 28
March 30..	Mr. Coleman, for Post-office stamps.....	7 80
"	H. Wachhorst's bill of 1868.....	82 50
"	J. N. Andrews, engraving bill, 1868.....	42 80
"	Geo. H. Baker, for diplomas, 1868.....	22 50
"	C. H. Krebs, bill of 1868.....	2 55
"	R. E. Draper, Directory of 1868.	2 50
"	Robt. Beck's salary for February and March.....	300 00
April 13....	Daily Bee, bill of 1868.....	38 25
"	Mrs. K. Kinsey, premium, 1868.....	3 00
"	For express envelops.....	5 00
"	T. J. McKim, for cleaning boiler.....	10 00
April 27....	Wm. Fern, premium of 1868.....	22 00
April 30....	Clark & Co., premium of 1868.....	8 00
May 1.....	Williams & Co., 1868.....	56 83
"	M. S. King, premium of 1868.....	12 00
"	R. J. Merkley, premium of 1868	25 00
"	Robert Beck, salary for April.....	150 00
"	A. Nachman's bill, 1868.....	3 35
"	R. E. Draper, Directory of 1869.....	2 50
May 17.....	Thomas Edwards, premium of 1868	15 00
June 12.....	Robt. Beck, salary for May.....	150 00
July 2.....	L. P. Marshall, for stall No. 348, returned.....	7 50
July 3.....	Robt. Beck, salary for June.....	150 00
July 10.....	A. Steiner, filling diplomas, 1868.....	9 00
July 14.....	Sacramento Gas Company.....	2 40
July 28.....	N. L. Drew & Co , making fence.....	40 00

Date.	On what account.	Amount.
August 6...	Robert Beck, salary for July	$150 00
August 12..	For express envelops	5 00
"	For tacks..	50
"	For folding posters	10 00
"	Hiram Clock, for pasting posters	10 50
"	N. L. Drew & Co., lumber for fence	54 12
August 24..	J. E. Miller, for stalls No. 402 and 403	15 00
August 30..	M. K. Sanborn, carpenter, two days	8 00
Sept. 3.....	T. Whalon, carpenter at Park	33 00
Sept. 4.....	E. Moore, carpenter at Hall	12 00
"	B. Cavenaugh, ten days labor	30 00
Sept. 6.....	J. H. Johnson, cleaning water closet	50 00
"	Robt. Beck, salary for August	150 00
Sept. 10.....	M. W. Willis, for music	750 00
Sept. 11.....	George Schmeizer, for wood	57 00
"	W. B. Gibson, premium of 1868	20 00
Sept. 15.....	Lyman Allen, for hay and straw	824 00
	PREMIUMS ON STOCK AT PARK, AS FOLLOWS:	
Sept. 15.....	Paid John Hall	305 00
"	L. P. Marshall	40 00
"	J. A. Douglas	30 00
"	Theodore Winters	115 00
"	S. B. Whipple	300 00
"	Alexander Ely	105 00
"	Robert Watt	25 00
"	G. C. McMullen	20 00
"	E. M. Skaggs	25 00
"	I. N. C. Jasper	40 00
"	D. M. Downey	30 00
"	A. Music	35 00
"	G. McWain	40 00
"	S. Treat	20 00
"	L. Upson	15 00
"	C. B. Hoffman	40 00
"	C. P. Marsh	20 00
"	Thomas Edwards	70 00
"	A. T. Renwick	50 00
"	Daniel Flint	20 00
"	C. H. Shears	20 00
"	R. A. Branton	70 00
"	—— Moulthrope	40 00
"	G. Ellis	30 00
"	L. H. Fassett	20 00
"	J. M. Frey	30 00
"	J. A. Martin	10 00
"	H. Wilsey	30 00
"	A. C. Nordyke	10 00
"	G. W. Hamilton	20 00
"	W. B. Gibson	15 00

Date.	On what account.	Amount.
Sept. 15.....	G. B. Stevens.....	$50 00
"	John Potter.....	35 00
"	Patterson & Overshire.....	200 00
"	W. H. Dawson.....	90 00
"	J. Judson.....	15 00
"	G. N. Swezy.....	120 00
"	J. R. Rose.....	105 00
"	S. Daniels.....	130 00
"	A. W. Butler.....	5 00
"	Grey & Gelmore.....	65 00
"	Peter Burns.....	30 00
"	Moses Sprague.....	10 00
"	James Robinson.....	5 00
"	C. Green.....	5 00
"	Theodore Winters.....	15 00
"	C. Green.....	10 00
"	E. F. Aiken.....	15 00
"	Mrs. E. McConnell.....	50 00
"	H. A. Rawson.....	90 00
"	—— Northrope.....	20 00
"	Thomas McConnell.....	85 00
"	Purses at Park.....	4,550 00
	PAID PREMIUMS AT HALL, AS FOLLOWS:	
Sept. 15.....	E. C. Biekford.....	3 00
"	Mrs. M. Bigley.....	2 50
"	I. S. Bamber.....	18 00
"	E. Parsons.....	5 00
"	T. Schaube.....	30 00
"	John R. Nickerson.....	75 00
"	J. S. Curtis.....	2 00
"	J. P. Goodnow.....	10 00
"	Pacific Business College.....	5 00
"	T. P. Clark.....	3 00
"	C. W. Hoit.....	5 00
"	John Cooper.....	5 00
"	A. S. Greenlaw.....	10 00
"	G. Cohn.....	2 00
"	S. K. Dodge.....	3 00
"	Mrs. J. P. Odbert.....	11 00
"	Miss Ellen Low.....	2 00
"	A. Ellison.....	10 00
"	A. Ellison.....	15 00
"	W. J. Robertson.....	10 00
"	I. N. Hoag.....	50 00
"	W. B. Ready.....	50 00
"	E. F. Aiken.....	14 00
"	W. M. Haynie.....	5 00
"	H. Van Every.....	5 00
"	N. Bush.....	40 00

Date.	On what account.	Amount.
Sept. 15.....	J. S. Harbison.....	$10 00
"	A. B. Gilbert.....	4 00
"	Laauser & Schaeffer	5 00
"	E. S. Harris.....	10 00
"	H. Bernard.....	80 00
"	Mrs. F. B. Chapman.....	2 50
"	G. E. Coggshall.....	21 00
"	Mrs. K. Kinsey.....	3 00
"	J. D. Rose	5 00
"	Mrs. W. W. Marvin.....	11 00
"	J. A. Mason.....	15 00
"	Amos Adams.....	15 00
"	Mrs. W. A. Morehead.....	2 00
"	Mrs. Sophia Schaeffer.....	5 00
"	Robert Williamson.....	20 00
"	Miss Lottie Hoffman.....	6 00
"	Mrs. W. E Brown.....	10 00
"	John Studarus.....	2 00
"	Mrs. C. K. Stevenson.....	10 00
"	W. Fern.....	40 00
"	N. P. Cole & Co.....	42 00
"	Mrs. A. C. Brown.....	3 00
"	C. G. Carpenter.....	35 00
"	J. Barrows.....	20 00
"	C. W. Reed.....	8 00
"	A. P. Smith.....	25 00
"	D. H. Woods.....	5 00
"	James Wise.....	10 00
"	Norton Bush.....	20 00
"	A. A. Hart.....	10 00
"	W. Shew.....	40 00
"	Mrs. S. M. Goggins.....	20 00
"	M. & A. Wilcox.....	10 00
"	Mrs. C. R. Stevenson.....	10 00
"	Mrs. C. E. Atkinson.....	3 00
"	Edward Muller.....	30 00
"	Capital Woollen Mills.....	70 00
"	G. L. McDaniel.....	5 00
"	Mrs. D. Kendall.....	3 00
Dec. 20.....	Miss Mary Alvord, premium.....	5 00
Dec. 28.....	Mrs. E. F. Aiken, premium.....	15 00
Dec. 31.....	Mrs. Murphy, premium.....	3 00
"	R. B. Gray, gold medals.....	421 50
Sept. 15 ...	Paid D. Woods, carpenter.....	75 00
"	W. Meyers, labor.....	25 50
"	Isaac Bradwell, stairkeeper	28 00
"	George Gilpatrick, labor.....	30 00
"	John Nickerson, allowance.....	50 00
"	M. W. Hodkins, doorkeeper.....	24 00
"	William Miner, clerk at Park	32 00
"	N. T. Carpenter, watchman at Hall	28 00

Date.	On what account.	Amount.
Sept. 15.....	W. H. Ashton, entry clerk at Hall.....	$50 00
"	F. E. Patton, entry clerk at Hall.....	36 00
"	G. W. Leitch, police watchman	28 00
"	J. Campbell, for use of chairs.....	3 00
"	W. H. Rattenberry, Assistant Sup't at Hall.....	60 00
"	D. Gillis, Marshal at Park.....	30 00
"	T. Golden, police.....	6 00
"	W. J. Robertson, Marshal.....	30 00
"	George Gordonier, watchman.....	5 50
"	George Whitlock, decorator	55 00
"	J. Carraghan, police.....	4 50
"	J. E. Smith, ticket clerk at Hall.....	30 00
"	S. A. Deuel, ticket clerk at Hall.....	18 00
"	A. S. Woods, ticket clerk at Hall.....	18 00
"	Y. W. Gunn, labor, lumber, etc.....	23 97
"	A. S. Woods, clerk in Secretary's office.....	60 00
"	W. Anderson, entry clerk at Park.....	15 00
"	J. C. Devine, cleaning statue.....	4 00
"	H Clock, labor..	79 00
"	Burnett, expressage.....	2 00
"	F. Johnson, stairkeeper and watchman.....	22 00
"	J. L. Johnson, entry clerk at Park.....	30 00
"	T. J. McKim, engineer	137 00
"	C. F. Reed, for wreaths for Norfolk and Lodi, '68	30 00
"	C. F. Reed, hacks for guests.....	10 00
"	W. M. Tolls, stairkeeper.....	21 00
"	H. Seaman, carpenter.....	37 00
"	H. J. Johnson, labor.....	18 63
"	T. J. Ramonet, labor.....	37 50
"	T. J. Hall, stairkeeper	24 00
"	Mrs. M. E. Jackson, chambermaid.....	15 00
"	William Mace, doorkeeper at Hall.....	24 00
"	Thomas Byrne, laborer.....	52 50
"	Pat Lynch, laborer.....	52 50
Sept. 16....	P. Clark, groceries..... ..	3 13
"	W. V. Frazier, gathering flags.....	1 50
"	W. V. Frazier, drayage from Park.....	1 00
"	W. V. Frazier, drayage on chairs to Hall..	1 25
"	W. V. Frazier, drayage on chairs to Hall.....	75
"	Negro at Park, omnibus hire.....	50
"	Thomas Hall, for two money boxes	3 50
"	Locksmith, fixing keys.....	75
"	Frank McGee, labor.....	19 50
"	J. Galloway, labor.....	15 00
"	John Howard, watchman.....	12 00
"	P. Kerns, labor.....	21 00
"	A. H. Norton, stairkeeper.....	17 25
"	A. H. Norton, carpenter.....	24 00
"	M. S. Hurd, gatekeeper	30 00
"	E. Parsons, amount overpaid on cider privilege....	7 60
"	Mike Haler, labor.....	33 00

Date.	On what account.	Amount.
Sept. 16.....	J. C. Allen, labor.....	$18 00
"	Thomas Hall, ticket clerk at Park.....	30 50
"	O. W. Wallace, labor	3 00
"	William Crump, watchman.....	36 00
"	Robert Beck, expenditures.....	39 45
"	Samuel Deal, gatekeeper.....	30 00
"	A. C. Bidwell, gatekeeper.....	30 00
"	F. Wing, doorkeeper.....	22 50
"	Joseph Taylor, gatekeeper.....	30 00
"	E. Parsons, premium of 1868.....	2 00
"	A. B. Gilbert, premium of 1868.....	2 00
"	Joseph Neumann, premium of 1868	70 00
"	Mrs. Reed, premium of 1868.....	10 00
Sept. 17.....	N. G. Curtis, balance of account.....	3,468 11
Sept. 18.....	State Capital Reporter, printing.....	91 50
"	F. S. Lardner, Superintendent Lower Hall.....	40 00
"	Sacramento Daily Record, printing.....	34 75
"	L. A. Spurgeon, hack hire.....	32 50
"	T. Lynch, labor.....	18 00
"	Geo. Schmeizer, machinist	137 50
"	B. R. Sweetland, chemicals.....	13 75
"	R. L. Robertson, labor	25 35
"	John Nickerson, police...	33 00
"	David Bush, gas fixing.....	231 50
"	T. D. Scriver, horse hire	25 00
"	W. P. Michener, canvas.....	56 10
"	E. G. Jefferies, printing.....	496 00
"	S. F. Hyde, exit gatekeeper.....	18 00
"	Spirit of the Times, printing.....	60 00
"	H. S. Beals, stair keeper.....	16 00
"	H. Holmes, police.....	12 00
"	J. W. Avery, lumber bill.....	69 41
Sept. 22.....	E. Mills, expenditures.....	15 00
"	Sacramento Daily Union, printing.....	168 75
"	Alta California, printing..	27 00
"	Morning Chronicle, printing.....	25 00
"	Kent & Co., bill posting in San Francisco.....	10 00
"	San Francisco Evening Bulletin, printing.....	27 00
"	Stockton Independent, printing.....	27 00
"	Marysville Appeal, printing.....	15 00
"	Oakland Daily Transcript, printing.....	21 00
"	Carson City bill poster.....	6 00
"	F. M. Chapman, horse hire.....	25 00
"	Edwards & Co., stationery.....	48 75
"	John Shellers, police.....	18 00
"	C. Huelsman, blacksmith.....	27 50
"	J. Slaughter, cleaning windows, whitewashing, etc.	87 85
"	For Wells, Fargo & Co.'s envelops.....	5 00
"	N. Henley, building engine bed.....	136 90
"	People's Insurance Company, insuring.....	162 50
"	John Isaacs, police.....	30 00

Date.	On what account.	Amount.
Sept. 22.....	G. T. Glover, ticket clerk, Park.....	$18 00
"	N. J. Burton, ticket clerk, Park.....	24 00
"	A. Nesal, mending flag.....	2 50
"	Mrs. Blackleach, making badges.....	15 50
"	Drayage on scales from Park.....	1 00
"	R. B. Lindsay, police.....	18 00
Sept. 25.....	Sacramento Gas Company, gas and lighting same.	225 00
"	Z. I. Wilson, hauling dirt.....	5 00
"	B. F. Cummings, making purses.....	5 00
"	W. F. Eaton, carpenter.....	6 00
Sept. 24....	B. Dennery, use of crockery.....	29 50
Sept. 25....	Toll & Ganong, buggy hire.....	54 00
"	D. Collins, drayage and steamer freight.....	84 50
"	Whittier, Fuller & Co., putting in glass.....	21 25
"	Dale & Co., fancy goods.....	17 00
"	Powers & Co., water cask.....	5 00
"	Benjamin Bullard, Jr., Assistant Secretary.....	148 00
"	John Bruner, chairs.....	18 00
Sept. 27....	Post-office bill, from April 1st to October 1st.....	8 00
"	J. F. Harrison, brooms.....	8 50
"	F. J. Moore, nails and spikes.....	16 75
"	Huntington & Hopkins' bill.....	49 45
"	Hamburgher & Co.'s bill.....	36 20
"	W. Sharpe's bill.....	5 50
"	H. Clock, labor.....	16 50
"	Robert Miller, watering streets.....	50 00
"	E. Dole, police.....	18 00
Oct. 1.....	W. Fern, allowance.....	20 00
"	G. T. Glover, clerk.....	6 00
"	Robert Beck, salary for September.....	150 00
"	G. H. Baker.....	50 00
Oct. 2.....	W. F. Frazier, lumber.....	2 16
Oct. 2.....	A. Menke, two baskets.....	2 00
"	Express charges on diploma.....	75
Oct. 5.....	G. C. Hall's bill.....	16 67
Oct. 8.....	C. S. Lowell, for stall 401.....	7 50
"	D. Schaffer, setting shafting.....	42 50
"	Summit Ice Company, ice.....	12 63
Oct. 9.....	N. L. Drew & Co., lumber.....	365 83
"	H. S. Crocker & Co.'s bill.....	90 00
Oct. 12.....	Charles F. Reed, President, expenditures.....	1,000 00
"	R. S. Carey, expenditures.....	370 00
Oct. 13.....	D. G. Webber, hauling dirt on G street.....	48 20
Oct. 29.....	Howland, Angell & Co., steam engine.....	700 00
Nov. 2.....	Robert Beck, salary for October.....	150 00
"	R. B. Grey's bill.....	64 00
"	Express charges.....	75
Nov. 29.....	Robert Allen's bill.....	248 95
"	"Jersey," for posting bills.....	5 00
Dec. 1.....	Robert Beck, salary for November.....	150 00
Dec. 8.....	A. Steiner, filling diplomas.....	40 50

Date.	On what account.	Amount.
Dec. 8.....	I. N. Hoag, on account, for writing up report for 1868 and 1869	$300 00
Dec. 11.....	Locke & Lavenson's bill	28 40
"	Samuel Jelly's bill	162 00
"	S. Lipman's bill	1 75
Dec. 16.....	Locke & Lavenson's bill	10 75
"	Post-office bill	4 00
"	John N. Andrews' bill	20 40
"	Charles W. Palmer's bill	15 00
Dec. 20.....	Safe	150 00
"	Expenditures	58 25
"	Ben. Bullard's bill for 1868	51 00
"	S. Carlisle	25 00
Dec. 27.....	Edwards & Co., stationery	5 25
"	Gillig, Mott & Co., stove	19 25
"	James Anthony & Co., advertising	9 00
Dec. 29.....	F. R. Klotz, wood	10 50
"	Sawing wood	1 75
Dec. 31.....	Robert Beck, salary for December	150 00
"	J. B. Collins, trimming trees	18 00
Dec. 20.....	Appropriations for bills and premiums uncalled for	578 00
	To repair of stalls	1,900 00
	Planting and boxing trees	100 00
	Repair of stand	250 00
	Show cases and wine screens	100 00
	Balance on hand	171 78
	Total disbursements	$28,497 85

ROBT. BECK, Secretary.

TRIALS OF SPEED IN 1869.

MONDAY, SEPTEMBER 6TH.

FIRST TRIAL.

Trotting Race.—Mile heats; three in five; free for all horses that have never beaten two thirty-five; purse—three hundred dollars.

Entries.

H. S. Spencer enters b. s. F. F. Low.
J. L. Eoff enters b. m. Lady Dooly.
C. W. Moulthrop enters b. s. Plumas.
C. H. Shear enters b. m. Alicia Mandeville.

Result.

Lady Dooly	2	1	1	1
F. F. Low	1	2	2	3
Plumas	4	4	3	2
Alicia Mandeville	3	3	dis.	

Time—2:38 3-5; 2:38 3-5; 2:39; 2:40 2-5.

SECOND TRIAL.

Trotting Race.—Mile heats; three in five; free for all four year olds; purse—three hundred dollars.

Entries.

Pat. Farrell enters s. g. Westfield.
H. S. Spencer enters s. f. Breeze.
J. L. Eoff enters b. s. Ajax.
H. W. Seals enters b. f. Black Swan.
T. McClellan enters g. f. Sally Shaw.

Result.

Ajax	1	1	1
Westfield	2	2	3
Breeze	3	3	2
Black Swan	drawn.		

Time—2:50; 2:46; 2:46.

TUESDAY, SEPTEMBER 7th.

FIRST TRIAL.

Running Race.—Mile heats; free for all three year olds; purse—three hundred dollars.

Entries.

Thos. Atchison enters b. s. Idaho.
R. T. O'Hanlon enters ch. s. Al. Bascom.
N. Coombs enters ch. s. Tophet.
George Treat enters ch. f. Maggie Dale.
A. Music enters s. s. Johnny Moore.

Result.

Tophet	2	1	1
Maggie Dale	1	2	2
Idaho	3	4	–
Al. Bascom	4	3	–
Johnny Moore	dis.		

Time—1:48¾; 1:49; 1:51 1-5.

SECOND TRIAL.

Running Race.—Mile heats; free for all; purse—three hundred and fifty dollars.

Entries.

N. Coombs enters c. g. May-be-so.
C. S. Williams enters b. s. Compromise.
J. S. Devine enters b. s. Kirby Smith.

Result.

Kirby Smith	1	1
May-be-so	2	2
Compromise	drawn.	

Time—1:46 3-5; 1:50 4-5.

THIRD TRIAL.

Pacing Race.—Mile heats; three in five; free for all; purse—three hundred dollars.

Entries.

Pat. Farrell enters s. g. Longfellow.
C. H. Shear enters gr. m. Empress.
D. Denison enters b. g. Mike O'Brien.
B. Rice enters br. g. Darkness.

Result.

Longfellow	1	2	1	1
Darkness	2	1	2	2
Mike O'Brien	3	3	3	3
Empress	4	4	dis.	

Time—2:31 2-5; 2:31 3-5; 2:31 2-5; 2:29.

WEDNESDAY, SEPTEMBER 8TH.

FIRST TRIAL.

Trotting Race.—Free for all; May Queen to wagon; mile heats; three in five; purse—four hundred dollars.

Entries.

B. Rice enters b. m. May Queen.
J. L. Eoff enters b. s. Paddy Magee.
S. E. Whitehead enters b. g. Regulator.

Result.

May Queen	1	2	1	2	1
Regulator	3	1	2	1	2
Paddy Magee	2	3	3	dis.	

Time—2:32 4-5; 2:35 3-5; 2:34; 2:37; 2:38 3-5.

SECOND TRIAL.

Trotting Race—Mile heats; three in five; free for all horses that have never beaten two-forty; purse—two hundred and fifty dollars.

Entries.

H. S. Spencer enters b. s. Alexander.
D. Denison enters b. s. Friday McCracken.
H. W. Seals enters s. m. Bracelet.

Result.

Alexander	1	2	1	1
Friday McCracken	2	1	2	2
Bracelet	dis.			

Time—2:38; 2:43; 2:41 1-5; 2:46.

THURSDAY, SEPTEMBER 9TH.

FIRST TRIAL.

Running Race.—Two mile heats; free for all; purse—four hundred dollars.

Entries.

Thomas Atchison enters b. s. Bloomsbury.
C. S. Williams enters b. s. Compromise.
George Treat enters s. s. Thad. Stevens.

Result.

Thad. Stevens	2 gal. over.
Compromise	1 drawn.
Bloomsbury	distanced.

Time—3:45.

SECOND TRIAL.

Trotting Race.—Mile heats; free for all three year olds; purse—two hundred and fifty dollars.

Entries.

H. W. Seals enters s. c. Onward.
C. H. Sisson enters s. f. Stockton Maid.
J. Sessions enters g. f. California Maid.

Result.

California Maid	1	1
Stockton Maid	2	2
Onward	3	3

Time—2:59 1-5; 2:50 3-5.

THIRD TRIAL.

Trotting Race—Three in five; purse—one hundred dollars. No entries.

Result.

Calhoun	3	1	1	2	1
Plumas	2	3	2	1	2
Ance	1	2	dis.		

Time—2:45 1-5; 2:43 3-5; 2:40 2-5; 2:40 3-5; 2:43 4-5.

FRIDAY, SEPTEMBER 10TH.

FIRST TRIAL.

Trotting Race.—Two mile heats; free for all; May Queen to wagon; purse—four hundred dollars.

Entries.

S. E. Whitehead enters b. g. Regulator.
J. L. Eoff enters b. m. Lady Dooly.
B. Rice enters dun g. Pride of the Bay.

Result.

Lady Dooly	1	1
Pride of the Bay	3	2
Regulator	2	dr.

Time—5:33 3-5; 5:26.

SECOND TRIAL.

Trotting Race.—Mile heats; three in five; free for all five year olds; purse—two hundred and fifty dollars.

Entries.

H. S. Spencer enters b. s. Alexander.
C. W. Moulthrop enters g. m. Marysville Queen.
H. S. Spencer enters dk. b. s. F. F. Low.

Result.

Marysville Queen	1	1	2	1
Alexander	2	2	1	2
F. F. Low	drawn.			

Time—2:42 2-5; 2:40; 2:42 3-5; 2:45.

SATURDAY, SEPTEMBER 11TH.

FIRST TRIAL.

Trotting Race.—Five miles out; free for all; purse—four hundred dollars.

Entries.

G. N. Ferguson enters s. m. Kate.
B. Rice enters b. m. Lady Lancaster.
S. B. Whitehead enters br. g. Democrat.
C. Green enters s. s. Bob Burns.
J. L. Eoff enters b. m. Lady Dooly.
D. Denison enters b. m. Mountain Maid.
Col. Dickey enters b. s. Hiram Woodruff.

Result.

Democrat	1
Lady Lancaster	2
Bob Burns	3
Kate	4
Mountain Maid	5
Lady Dooly	6
Hiram Woodruff	dr

Time—13:56 2-5.

PREMIUMS AWARDED IN 1869.

FIRST DEPARTMENT.

THOROUHBRED HORSES.

Name of owner.	Animal.	Name of animal.	Premium.
	Stallions.		
John Hall	Best stallion, four years old and over	Woodburn	$50
L. P. Marshall.	Best stallion, three years old	Medoc	$40
J. A. Douglass	Best stallion, two years old	Pelham	$30
John Hall	Best stallion, one year old	Ironclad	$20
John Hall	Best colt, under one year	No name	$15
	Mares.		
John Hall	Best mare, four years old and over, with colt	Peggy Ringold	$50
Theodore Winters	Best mare, four years old and over	Transita	$40
John Hall	Best mare, two years old	Alice May	$25
John Hall	Best mare, one year old	Jannette	$20
Theodore Winters	Best mare colt, under one year old	Unknown	$15

FAMILIES.

Name of owner.	Animal.	Name of animal.	Premium.
John Hall	Best thoroughbred sire, with not less than ten of his colts, all thoroughbred	Woodburn	$75
John Hall	Best thoroughbred dam, with not less than four of her colts, all thoroughbred	Peggy Ringold	$50
S. B. Whipple	Best stallion, other than thoroughbred, with not less than ten of his colts	Hambletonian	$75
Alexander Ely	Best dam, other than thoroughbred, with not less than three of her colts	Fanny	$40

HORSES OF ALL WORK.

Name of owner.	Animal.	Name of animal.	Premium.
	Stallions.		
J. M. C. Jasper	Best stallion, four years old or over	Indicator	$40
D. M. Downey	Best stallion, three years old	Solano Chief	$30
A. Musiek	Best stallion, one year old	Mark Moore	$15
	Mares.		
G. M. McWain	Best mare, four years old or over, with colt	Julia Ann	$40
S. Treat	Best mare, three years old.	Dash	$20
L. Upson	Best mare, two years old	Queen	$15

GRADED HORSES.

Name of owner.	Animal.	Name of animal.	Premium.
	Stallions.		
C. B. Hoffman	Best stallion, four years old and over	Lexington	$40
C. P. Marsh	Best stallion, two years old	Hidi	$20
Thomas Edwards	Best stallion, one year old	Phil. Sheridan	$15
Thomas Edwards	Best colt, under one year, without reference to sex	Jane	$15
	Mares.		
Alexander Ely	Best mare, four years old or over, with colt	Norah	$40
S. B. Whipple	Best mare, four years old	Star Queen	$30
A. Musiek	Best mare, three years old.	Polly Moore	$20
Alexander Ely	Best mare, two years old	Flora	$15
Alexander Ely	Best mare, one year old	Henrietta	$10

DRAFT HORSES.

Name of owner.	Animal.	Name of animal.	Premium.
	Stallions.		
H. Wilsey	Best stallion, four years old or over	Young Rawley	$30
James Northrup	Best stallion, two years old	Wallace	$20
A. T. Nordyke	Best stallion, one year old	Young John Bull	$10
	Mares.		
Robert A. Branton	Best mare, four years old or over, with colt	Nancy	$30
G. W. Hamilton	Best mare, three years old.	Queen of the West	$20
W. B. Gibson	Best mare.	Clydesdale	$15

ROADSTERS.

Name of owner.	Animal.	Name of animal.	Premium.
	Stallions.		
C. W. Moulthrop....	Best stallion, four years old or over.....	Signal.....	.....$40
George Ellis.....	Best stallion, three years old.....	Excelsior.....	.....$30
L. H. Bassett.....	Best stallion, two years old.....	Joseph Nelson...	.....$20
Dr. J. M. Frey.....	Best gelding, four years old or over.....	Big Ben.....	.....$30
	Mares.		
S. B. Whipple.....	Best mare, four years old or over..	Sally Shaw.....	.....$30
A. T. Renwick.....	Best mare, three years old.....	Mary Patten.....	.....$20
S. B. Whipple.....	Best mare, two years old.....	Minnie.....	.....$15

CARRIAGE HORSES.

Name of owner.	Animal.	Name of animal.	Premium.
E. M. Skaggs.....	Best matched span of carriage horses, owned and used as such by one person.....	Lady Washington and Lady Bell.....	....$25
J. C Morrison.....	For matched span of carriage horses owned and used by one person as such.....	.....	Special—$20 or silver goblet.

ROADSTER TEAMS.

Name of owner.	Animal.	Name of animal.	Premium.
Robert Watt,.....	Best double team roadsters, owned and used as such by one person	Fannie Wilkins and Kate Daniels.....	.....$25
G. C. McMullen.....	For double team roadsters, owned and used as such by one person	Red Buck and Solano Jo.....	...Special—Goblet or $20
Mrs. Ware.....	For double team roadsters, owned and used as such by one person	Pilot and Honest John.....	....Goblet or $20

SADDLE HORSES.

Name of owner.	Animal.	Name of animal.	Premium.
J. A. Martin.....	Best saddle horse.....	Pilgrim.....	.....$10

COLTS.

Name of owner.	Animal.	Name of animal.	Premium.
A. T. Renwick	Best yearling horse colt	E. M. Skaggs	$30
Daniel Flint	Best suckling horse colt	Edwin Forrest	$20
C. H. Shear	Best yearling mare colt	Agatha States	$20
R. C. Branton	Best suckling mare colt	Nancy	$15
S. B. Whipple	Exhibit of six colts, owned by one person, of any age or sex	Heads Up, Pat Gallager, Billy, Minnie, Hector, Fly by Night.	$50

SWEEPSTAKES.

Name of owner.	Animal.	Name of animal.	Premium.
S. B. Whipple	Best stallion of any age	Hambletonian	$100
Theodore Winters	Best mare of any age	Transita	$75
S. B. Whipple	Best team four-in-hand		Special—Goblet or $20

JACKS.

Name of owner.	Animal.	Name of animal.	Premium.
G. D. Stevens	Best jack	Buena Vista	$50
T. Edwards	Best jennet	Lady Franklin	$40

MULES.

Name of owner.	Animal.	Name of animal.	Premium.
John Potter	Best mule, two years old	Jack Potter	$20
John Potter	Best mule, one year old	Lillie Potter	$15

AYRSHIRE CATTLE.

Name of owner.	Animal.	Name of animal.	Premium.
	Bulls.		
S. Daniels	Best four year old or over	Sir Walter	$40
	Cows.		
S. Daniels	Best four year old or over	Ruth	$30

DURHAM CATTLE.

Name of owner.	Animal.	Name of animal.	Premium.
	Bulls.		
W. H. Dawson	Best four years old and over	Lolo Rooth	$40
Patterson & Overshire	Best three years old	Turk of Oak Home	$25
John Judson	Best one year old	Prince Radmon	$15
G. N. Swezy	Best bull calf	Duke First of Yuba	$10
	Cows.		
G. N. Swezy	Best four years old or over	Kate Dunn	$30
Patterson & Overshire	Best three years old	Flora Fourth	$25
G. N. Swezy	Best two years old	Beauty	$20
Patterson & Overshire	Best one year old	Tulip Sixth	$15
Patterson & Overshire	Best heifer calf	Rosa Bell	$10

DEVON CATTLE.

Name of owner.	Animal.	Name of animal.	Premium.
	Bulls.		
J. R. Rose	Best four year old or over	Bloomfield	$40
S. Daniels	Best one year old	Victor	$15
J. R. Rose	Best bull calf	Young Sonoma	$10
	Cows.		
S. Daniels	Best four year old or over	Fashion	$30
J. R. Rose	Best three year old	Beauty	$25
J. R. Rose	Best two year old	Emanuel Second	$20
S. Daniels	Best one year old	Fairy Second	$15
J. R. Rose	Best heifer calf	Lady Grant	$10

GRADED CATTLE.

Name of owner.	Animal.	Name of animal.	Premium.
	Bulls.		
R. A. Branton	Best four year old or over	Grant	$25
G. N. Swezy	Best three year old	Harry Clay	$20
G. N. Swezy	Best bull calf	Alexander	$5
	Cows.		
G. N. Swezy	Best four year old or over	Queen	$20
Patterson & Overshire	Best three year old	May Bird	$15
G. N. Swezy	Best two year old	Dolly	$10
G N. Swezy	Best one year old	Amelia	$5
G. W. Butler	Best heifer calf	Mary	$5

SWEEPSTAKES.

Name of owner.	Animal.	Name of animal.	Premium.
W. H. Dawson	Best bull, of any age or stock	Lolo Rooth	$50
Patterson & Overshire	Best cow, of any age or stock	Roselle	$40

FAT SHEEP.

Name of owner.	Animal.	Name of animal.	Premium.
Patterson & Overshire	Best three, two years old or over		$10

SPANISH MERINO.

Name of owner.	Animal.	Name of animal.	Premium.
Ellen McConnell	Best ram, two years old or over	Young Mack	$20
Thomas McConnell	Best three ram lambs		$15
Thomas McConnell	Best three ewes, two years old or over		$15
Thomas McConnell	Best three ewes, under two years old		$15
Thomas McConnell	Best five ewe lambs		$15

FRENCH MERINO.

Name of owner.	Animal.	Name of animal.	Premium.
Patterson & Overshire	Best ram, two year old and over		$20
	Best ram, under two years old		

COTSWOLD SHEEP.

Name of owner.	Animal.	Name of animal.	Premium.
Patterson & Overshire	Best ram, two years old or over	Prince Alpha	$20
H. A. Rawson	Best ram, under two years old	Young Prince Ontario	$15
	Best three ewes, under two years.		
H. A. Rawson	For two pure Cotswold sheep, one three years old and one one year old		Honorable mention.

LEICESTERSHIRE.

Name of owner.	Animal.	Name of animal.	Premium.
Patterson & Overshire	Best ram, two years old or over	Prince of Wales	$20

GRADED OR CROSSED WITH SPANISH MERINO.

Name of owner.	Animal.	Name of animal.	Premium.
Mrs. E. McConnell	Best ram, under two years old	Liberty	$10
F. Graham	Best three ram lambs		$15
F. Graham	Best three ewes, two years or over		$10
F. Graham	Best three ewes, under two years		$10
F. Graham	Best five ewe lambs		$10

GRADED WITH COTSWOLD.

Name of owner.	Animal.	Name of animal.	Premium.
H. A. Rawson	Best ram, two years old or over		$15
H. A. Rawson	Best ram, under two years old		$10
H. A. Rawson	Best three ram lambs		$15
H. A. Rawson	Best three ewes, two years or over		$10

SWEEPSTAKES ON SHEEP.

Name of owner.	Animal.	Name of animal.	Premium.
H. A. Rawson	Best buck, of any age or sex	Young Prince of Ontario	$25
Mrs. E. McConnell	Best ewe, of any age or sex		$20
Thomas McConnell	Best pen of five ewes, of any age or breed		$25

CASHMERE GOATS.

Name of owner.	Animal.	Name of animal.	Premium.
Gray & Gilmore	Best thoroughbred buck	El Dorado	$20
Gray & Gilmore	Best thoroughbred she goat	Cleopatra	$15
Gray & Gilmore	Best thoroughbred three kids		$15

GRADED.

Name of owner.	Animal.	Name of animal.	Premium.
Gray & Gilmore	Best lot of three	Snowdrop, Ruth and Blanch	$15

SWINE—LARGE BREEDS.

Which, when fat, will weigh, at mature age, three hundred pounds.

Name of owner.	Animal.	Name of animal.	Premium.
Peter Burns	Best boar two years old and over	Dick	$15
M. Sprague	Best boar, under two years old	Dick	$10
James Robinson	Best boar six months and under one year	Brighton Boy	$5
E. F. Aiken	Best breeding sow, two years old or over	Dolly	$10
Charles Green	Best breeding sow, one year old		$10
E. F. Aiken	Best sow, six months and less than one year		$5
A. P. Smith	Best lot of not less than six pigs, not less than five nor more than ten months old		$15

POULTRY.

Name of owner.	Animal.	Name of animal.	Premium.
Peter Burns	Best lot of white or gray dorkins		$5
Peter Burns	Best lot of five toed dorkins (distinct variety)		$5
Charles Green	Best lot game chickens (Norfolks)		$5
Peter Burns	Best lot English magpie ducks, with top-knots		$5

SECOND DEPARTMENT.

MACHINERY, AGRICULTURAL MACHINES, VEHICLES, ETC.

Exhibitor.	Residence.	Article.	Premium.
J. F. Harris	Sacramento	Best display of brooms	Special mention
W. B. Ready	Sacramento	Best two-horse cultivator	$5
M. and A. Wilcox	Sacramento	Best apparatus for raising water	$10
S. E. Hollister	San Francisco.	Washing machine	Special—Diploma.
J. L. Bartlett	Stockton	Keep's globe pump	Diploma.
E. C. Bickford	San Francisco.	Best farm and picket gate	$5
R. Knott	Suisun	Best horse-power fastener	Honorable mention.
G. W. Harris	Maine Prairie.	Best gang plough	Diploma.
Baker & Hamilton	Sacramento	Best display of agricultural machinery	Diploma.
A. Spinks	Sacramento	Best corn sheller (imported)	Diploma.
E. G. Bingham	Suisun	Best pruning shears	Special—$5
A. Williams	Oakland	Best imported rotary harrow	Diploma.
William Jones	Yolo County	Best fruit cooker	Special—Diploma.
P. G. Wilhite	Missouri	Best model of flour bolt	Diploma.
P. G. Wilhite	Missouri	Best model of heater for collecting sediment in water before using in steam boilers	Special—Diploma.
T. C. Walters	San Francisco.	Best fastener for buggy shafts	Honorable mention.
E. G. Clark	Marysville	Best grape crusher and stem separator	Diploma.
P. Murphy	Brighton	Best imported reaper and mower combined	Diploma.
P. Murphy	Brighton	Best broadcast seed sower and coverer	Diploma.
P. Murphy	Brighton	Best double-hand corn planter	Diploma.
W. C. McKenzie	San Francisco.	Best imported mechanical churn or washer	Diploma.
Servius Tonnar	San José	Best pruning saw	Honorable mention.
Servius Tonnar	San José	Best grafting wax	Honorable mention.
T. P. Clark	San Francisco.	Best washing machine	$3
J. D. Rose	Truckee	Improved sulky wheel	Special—$5
Mathew Cook	Sacramento	Best blasting wedge	Special—Diploma.
W. B. Ready	Sacramento	Best three-gang plow	$20
W. B. Ready	Sacramento	Best large breaking plough	$10
A. Ellison	Marysville	Best two-gang plough	$15
J. D. Arthur & Son.	San Francisco.	Second-best two-gang plough	Special—Diploma.
Baker & Hamilton	Sacramento	Best imported cast steel plough	$10
W. B. Ready	Sacramento	Best display California agricultural implements	$25
A. Ellison	Marysville	Best stubble plough	$10
Baker & Hamilton	Sacramento	Best sweepstakes gang plough	
Mr. — Locher	Oroville	Best model steam plough	
Hutchinson & Cheney	San Francisco.	Best stock scales, "Victor."	Diploma and $10
Treadwell & Co	Sacramento	Best seed sower, Cahoon's patent	Diploma.

VEHICLES.

Exhibitor.	Residence.	Article.	Premium.
H. Bernard	Sacramento	Best two-horse family carriage	$25
H. Bernard	Sacramento	Best one-horse family carriage	$20
H. Bernard	Sacramento	Best top buggy	$15
H. Bernard	Sacramento	Best spring market wagon	$10
H. Bernard	Sacramento	Best street goods wagon	$5
H. Bernard	Sacramento	Best display wheels, hubs, etc	$5
W. J. Robertson	Sacramento	Best farm wagon for general purposes	$10
J. A. Mason	Sacramento	Doctor's phæton	$15
J. A. Mason	Sacramento	Three-seat thoroughbrace wagon	Special—Diploma.
J. A. Mason	Sacramento	Side-spring wagon	Special—Diploma.

THIRD DEPARTMENT.

TEXTILE FABRICS.

Exhibitor.	Residence.	Article.	Premium.
Samuel R. Dodge	Sacramento	Best display of gloves	$3
Mrs. J. L. Hummel	Sacramento	Embroidery and needlework	Framed diploma.
Mrs. S. E. Hollister	San Francisco.	Shellwork and bedspread	Honorable mention.
Mrs. Juliana Bayer	Sacramento	Display of needlework	Special—Diploma.
Miss Lottie Hoffman	Sacramento	Best silk embroidered ottoman	$3
Miss Lottie Hoffman	Sacramento	Best tatting collar	$3
Mrs. S. Schaeffer	Lower Lake	Best embroidery picture	$5
Mrs. G. L. McDaniels	Marysville	Needlework	Honorable mention.
Mrs. Mary Almond	Sacramento	Specimens needlework	$5
Mrs. Saul	Folsom	Log cabin quilt	Honorable mention.
Miss M. E. Coats	Sacramento	Worsted work	Honorable mention.
J. H. Warwick	Sacramento	Silk goods	Honorable mention.
Anna Smith	Marysville	Needlework	Special—Napkin ring.
Mrs. G. C. Shipman	Sacramento	Best mat	Special—Napkin ring.
Mrs. F. J. Gehring	Sacramento	Crochet curtain	Napkin ring.
Mrs. W. W. Marvin	Sacramento	Best hand-made bedspread	$2
Mrs. C. R. Stephenson	Sacramento	Afghan carriage robe	Special—$10 and diplo'a.
T. Rogers Johnson	San Francisco.	Embroidery, regalia and military goods	Special—Silver medal.
Miss Nellie Sprague	Sacramento	Embroidery	Special—Napkin ring.
Mrs. F. M. Chapman	Sacramento	For sofa cushion	Special—$2
Mrs. E. E. Haswell	San Francisco.	Case of millinery goods	Premium.
Mrs. H. Kuhl	Sacramento	Stamping, embroidery and crochet	Special—Diploma.
Capital Woollen M'ls	Sacramento	Best pair woollen blankets	$5
Capital Woollen M'ls	Sacramento	Best ten yards flannel	$5
Capital Woollen M'ls	Sacramento	Wrapping blankets and cashmeres of various kinds	Special mention.
Mrs. M. A. Joy	Sacramento	Rag rugs	Honorable mention.
J. J. Meussdorffer	Sacramento	Best exhibit of hats	Diploma.
G. L. McDaniels	Marysville	Best display saddles and bridles and sinch	$5
E. Barnett	Marysville	Saddle trees	Honorable mention.

TEXTILE FABRICS—Continued.

Exhibitor.	Residence.	Article.	Premium.
P. Kelly	San Francisco.	Best display gents' and ladies' boots and shoes	Diploma.
J. W. Todd	Sacramento	Gents' boots	Honorable mention.
Miss Helen Low	Sacramento	Best lace collar	$2
Miss Nellie Sprague	Sacramento	Hair wreath	Special—Silver cup.
Mrs. S. M. Bishop	San Francisco.	For infants' caps	Special—Diploma.
Thomas A. Garey	Los Angeles	Specimens raw silk and cocoons	Special.
Mrs. S. M. Bishop	San Francisco.	Millinery goods	Honorable mention.
Mrs. Cronkite	Sacramento	Knitted stockings	Napkin ring.
M. L. Price	Sacramento	Display of ladies' shoes	Honorable mention.
Mrs. R. L. Jones	Sacramento	Best twelve-form model for fitting dresses	Special—Diploma.
Mrs. J. Chrisman	Sacramento	Braided rag stair carpet	Honorable mention.
Mrs. J. E. Brian		Bedquilt and table cloth	Honorable mention.
S. W. Ravcley	Knight'sLanding	Double set of buggy harness	Honorable mention.
I. S. Deihl	Sacramento	Specimens of cassimeres, wools and manufactures	Honorable mention.
Mrs. E. H. Stevens	Sacramento	Perforated collar	Honorable mention.
Mrs. Jane Ames	Sacramento	Knit bedspread	Honorable mention.
M. T. Barr	Sacramento	Saddle trees	Honorable mention.
G. W. Cook	Sacramento	Needle mat	Honorable mention.
Mrs. J. C. Daley	Sacramento	Specimens of hair work	Silver cup.
Mrs. K. Kinsey	Sacramento	Picture with shell frame	Special—$3
Mrs. M. Bigley	Sacramento	Shellwork tower	Special—$2 50
J. F. Fugazi	Sacramento	Grecian gondola	Premium.
Mrs. G. J. Gehring	Sacramento	Flower basket	Honorable mention.
Mrs. Wm. Morchead	Sacramento	Flowers made from fish scales	Special—Butter knife.
Mrs. Wm. Morchead	Sacramento	Best wax flowers	$2
Mrs. Wm. Morchead	Sacramento	Shell frame, shell brackets and card frame	Special—Napkin ring.
J. S. Curtis	Yolo	Worsted work wreath and hair	Napkin ring.
Mrs. J. Bayer	Sacramento	Needlework pictures, card case and worsted work pictures	Napkin ring.
Mrs. A. C. Brown	Sacramento	Wax flowers	Special—$3
Miss E. Coppin	Sacramento	Hair wreath	Special.
Mrs. R. J. Merkley	Sacramento	Feather wreath	Special.
D. F. Hall	Sacramento	Bouquet from cocoons	Special.
Mrs. T. Flemming	Sacramento	Hair and leather work picture	Honorable mention.
Mrs. T. Flemming	Sacramento	Moss work landscape and Grecian landscape	Honorable mention.
Mrs. R. Dunavant	Sacramento	Seed wreath and frame	Special—$3
Mrs. C. H. Ross	Sacramento	Phantom bouquet	Silver cup.
Pupils of the Roman Catholic Orphan Asylum	San Francisco.	Needlework picture of Washington	Special—Framed diplo'a.
Edwards & Co	Sacramento	Display of fancy stationery	Premium.
W. A. Abernethy & W. A. Harper	Sacramento	Ivy type frame	Special—Diploma.
R. W. Jackson	Sacramento	Pearl jewellery	Framed diploma.
Nellie Welty		Beadwork	Napkin ring.
Mrs. E. P. Figg	Sacramento	Specimens beadwork	Honorable mention.
Mrs. L. Elkus	Sacramento	Artistic work in candle grease	Honorable mention.
Mrs. M. S. Reed	Sacramento	Best skirt supporters	Honorable mention.
Miss G. B. Stevens	Vacaville	Best collection floral waxwork	Special—Napkin ring.
Miss Emily Myers	Amador	Hairwork wreath	Special—Diploma.

FOURTH DEPARTMENT.

MECHANICAL PRODUCTS, ETC.

Exhibitor.	Residence.	Article.	Premium.
Brittain, Holbrook & Co	Sacramento	Best display of copper work; best cooking stove for wood and coal; Best home manufactured trays; best display glass, wood, tin, etc.	Special—Silver medal.
Huntington & Hopkins	Sacramento	Best general display of hardware	Premium.
J. Carolan & Co	Sacramento	Best display of locks, door trimmings, etc	Special mention.
J. Carolan & Co	Sacramento	Best display of sportsman's goods	Special—Silver medal.
Long & Burden	Sacramento	Best display plumbers' goods	Diploma.
D. Bush	Sacramento	Best chandeliers and burners	Special—Diploma.
R. C. Terry	Sacramento	Best French cooking range	Silver medal.
Gillig, Mott & Co	Sacramento	Best display tin ware	$3
H. Van Every	Sacramento	Best parlor stoves	$5
Pacific Plate Works	San Francisco	Best display of plated ware	Silver medal.
Lake & Co	San Francisco	Best display of boot and shoe blacking	$1
Dr. Folleau	San Francisco	Best display of trusses and orthopædic instruments and artificial limbs	Special—Silver medal.
N. Clark	Sacramento	Best display of stone ware, fire brick, etc	Special—Diploma.
S. Pillsberry	San Francisco	Display of washing fluids and liquid laundry blue, and Parepa Rosa toilet companion	Special—Diploma.
Withington & Bagley	Sacramento	Best common soap and washing powder	$2
Parish Soap Co. (A. J. Kane, Agent)	San Francisco	Best condensed soap	Special—Diploma.
Justin Gates & Bro	Sacramento	Display of fancy soaps, chemicals, etc	Special—Silver medal.
Laauser & Schaeffer	Sacramento	Best wine casks	Framed diploma.
Laauser & Schaeffer	Sacramento	Best pork barrels	$3
Lausser & Schaeffer	Sacramento	Best butter firkins	$2
W. T. Garratt	San Francisco	Best bell and cannon	Special—Silver medal.
J. Gates & Bro	Sacramento	Soda fountain, Mathews' patent	Special mention.
H. C. Kirk	Sacramento	Best display of surgical and dental instruments	Diploma.
J. F. Fugazi	Sacramento	Toilet articles	Special mention.
J. A. Conboie	Sacramento	Best display of burial caskets, plated handles and plates	Special premium.
John Bensley	San Francisco	Display of flax-seed oil cake	Special mention.
Laufkotter & Haig	Sacramento	Best bath tub and wash basin, their own invention	Special—Diploma.
El Dorado Polish Co.	San Francisco	Specimens of polish	Special mention.
Hucks & Lambert	San Francisco	Best axle grease	Honorable mention.
H. Gage	Stockton	Patent adjustable collar for horses	Honorable mention.
E. S. Holden	Stockton	Slate, from Copperopolis	Honorable mention.
J. Donnolly	San Francisco	Best display of yeast powders	Framed diploma.
G. E. Ball	San Francisco	Best salad dressing	Diploma.

CABINET WARE.

Exhibitor.	Residence.	Article.	Premium.
Strahle & Hughes...	San Francisco.	Best billiard table, Phelan cushions.	...Special—Silver medal.
Strahle & Hughes...	San Francisco.	Samples of polished California woods	..... Special premium.
Servius Tonnar.....	San Francisco.	Rustic chairs	.....Honorable mention.
Whittier, Fuller & Co.	San Francisco.	Best and largest mirror.....	.....Special—Diploma.
Crandall Spring Bed Co.....	San Francisco.	Patent spring bed.....	.....Honorable mention.
Hopley & Co.....	Sacramento....	Best lounge.....	.....$5
N. P. Cole & Co.....	San Francisco.	Best dressing bureau	..... $5
N. P. Cole & Co.....	San Francisco.	Best sofa.....	.....$5
N. P. Cole & Co.....	San Francisco.	Best book case	.....$3
N. P. Cole & Co.....	San Francisco.	Best wardrobe.....	....$3
N. P. Cole & Co.....	San Francisco.	Best sick chair.....	.....$3
N. P. Cole & Co.....	San Francisco.	Best extension table.....	.....$3
N. P. Cole & Co.....	San Francisco.	Best set of parlor chairs	.....$5
N. P. Cole & Co.....	San Francisco.	Best centre table.....	.....$5
N. P. Cole & Co.....	San Francisco.	Best set parlor furniture.....	....$10
N. P. Cole & Co.....	San Francisco.	Best library set	.....Special premium.
N. P. Cole & Co.....	San Francisco.	Best display furniture.....	.....Diploma.
N. P. Cole & Co.....	San Francisco.	Best marquetry cabinet.....	.....Special premium.

FIFTH DEPARTMENT.

SILK, VEGETABLES, ROOTS, ETC.

Exhibitor.	Residence.	Article.	Premium.
I. N. Hoag.	Yolo.....	Best exhibit of silk business.....	.....$50
Edward Muller.....	Nevada Co.....	Best display of cocoons and reeled silk.....	.....Special—$30
J. F. Harrison.....	Sacramento....	Sample broom corn.....	.....Special—Diploma.
Thomas Edwards....	Sacramento....	Best field crop broom corn.....	....$15
J. P. Goodenow.....	Yolo	Best two bushels Chile wheat.....	.....$10
J. L. Clark.....	Sacramento....	Two bales of hops.....	.....Special.
W. M. Haynie.....	Sacramento....	One bale of hops.....	.....$5
J. R. Merkley.....	Sacramento....	Best ten acres sample hops.....	.....$25
J. Barrows.....	Lynn Co., Or..	Best two bushels of Australian wheat	.....First—$10
J. Barrows.....	Lynn Co., Or..	Best two bushels of white fall wheat	.....First—$10
E. L. Aiken.....	Sacramento....	Best sample castor beans.....	.....$4
W. Fern.....	Sacramento....	Best field crop of alfalfa for 1869, fourth cutting.....	.....$15
Robert Williamson..	Sacramento....	Best one-half peck white potatoes, early Goodrich.....	.....$5
W. Fern.....	Sacramento....	Best one-half bushel pinkeye potatoes	.....$5
W. Fern.....	Sacramento....	Best and greatest variety of potatoes	.....$5
Robert Williamson..	Sacramento....	Best one-half bushel sweet potatoes	....$5
G. E. Coggshall.....	Sacramento....	Best one-half dozen parsnips.....	.....$2
Thomas Edwards....	Sacramento....	Carrots, sample field crop.....	....$15
G. E. Coggshall.....	Sacramento....	Best long blood beets.....	.....$2

SILK, VEGETABLES, ROOTS, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
G. E. Coggshall	Sacramento	Best turnip beets	$2
Robert Williamson	Sacramento	Best sugar beets	$2
George E. Coggshall	Sacramento	Best display of beets in variety and quantity	$3
W. A. Lattie	Rockville, Solano County	Best peck of tomatoes	$2
W. A. Lattie	Rockville, Solano County	Best display of tomatoes	$3
W. Fern	Sacramento	Best cabbage (drumhead)	$2
W. Fern	Sacramento	Best peppers	$1
G. E. Coggshall	Sacramento	Best cabbage of other variety	$2
G. E. Coggshall	Sacramento	Best display of yellow onions	$1
G. E. Coggshall	Sacramento	Best mammoth squash	$2
George Cohn	Sacramento	Best Hubbard squash	$2
George E. Coggshall	Sacramento	Best variety of squashes	$4
A. B. Gilbert	Sacramento	Best pumpkins	$4
G. E. Coggshall	Sacramento	Best sweet green corn	$2
Robert Williamson	Sacramento	Best exhibit of sweet corn (dry)	$3
John Studerns	Brighton	Best sweet watermelon	$2
W. Fern	Sacramento	Best of any other kind of watermelon	$2
W. Fern	Sacramento	Best sample of barley	$5
C. W. Hoit	Sacramento	Best cantaloupes	$2
Robert Williamson	Sacramento	Best variety of melons	$5
G. E. Coggshall	Sacramento	Best cucumbers	$1
W. Fern	Sacramento	Best white beans	$2
W. Fern	Sacramento	Best green gherkins	$1
W. Fern	Sacramento	Best egg plant	$1
W. Fern	Sacramento	Best and greatest display of vegetables	$15

BREAD, BUTTER, PICKLES, PRESERVES, ETC.

Exhibitor.	Residence.	Article.	Premium.
Amos Adams	Sacramento	Best firkin butter	$15
Miss L. Hinkley	Placer Co	Largest and best variety of fruit in jars	Diploma.
Mrs. J. Hale	Stockton	Largest and best variety of jelly	Diploma.
Mrs. J. P. Odbert	Sacramento	Best apple jelly	$3
Mrs. W. W. Marvin	Sacramento	Best preserved quinces	$3
Mrr. W. W. Marvin	Sacramento	Best preserved peaches	$3
Mrs. W. W. Marvin	Sacramento	Best preserved pears	$3
Mrs. J. P. Odbert	Sacramento	Best tomato catsup	$3
Mrs. J. P. Odbert	Sacramento	Best cucumber catsup	$3
Mrs. David Kendall	Sacramento	Best pickled peaches	$3
Mrs. C. E. Atkinson	Folsom	Best pickled figs	$3
Mrs. Cronkite	Sacramento	Best pickled onions	$3
Mrs. J. P. Odbert	Sacramento	Largest variety of jellies in one jar	Honorable mention.
Mrs. J. P. Odbert	Sacramento	Best sweet pickles	Special—$2
J. S. Harbison	Sacramento	Best ten pounds honey	$5

WINES, LIQUORS, ETC.

Exhibitor.	Residence.	Article.	Premium.
Thiebaud Schaub...	Oroville.....	Best white wine, four years old.....	.....$10
Thiebaud Schaub...	Oroville.....	Best white wine, three years old.....	.....$10
Thiebaud Schaub...	Oroville.....	Best white wine, two years old.....	.....$10
J. R. Nickerson.....	Lincoln	Best white wine, one year old.....	.....$10
John Heinsdorffer....	Murphy's C'p..	Best red wine, one year old.....	.....Diploma.
J. R. Nickerson.....	Lincoln	Best sherry.....	.....$10
J. R. Nickerson.....	Lincoln	Best California port.....	.....$10
Eberhardt & Lachman.....	San Francisco.	Best white sparkling wine.....	.....$10
C. G. Carpenter.....	Diamond Sp's.	Best grape brandy, one year old.....	.....$5
C. G. Carpenter.....	Diamond Sp's.	Best grape brandy, four years old...	.....$15
C. G. Carpenter.....	Diamond Sp's.	Best peach brandy.....	.....$15
Dr. Renz.....	Sacramento....	Renz's Bitters.....	...Special—Silver medal.
J. R. Nickerson.....	Lincoln	Catawba wine, one year old.....	.....Special notice.
J. R. Nickerson.....	Lincoln	Angelica wine.....	.....Special—$10
— Pioche (by Fox & Strutz.....	San Francisco.	Vichy water.....	.....Special notice.
A. Bona	San Francisco.	Squarza's punches.....	.....Special—Diploma.
John Heinsdorffer...	Murphy's C'p.	White wine, five years old.....	.....Special notice.
J. R. Waters.....	Sacramento....	California seltzer water.....	.....Special notice.

SIXTH DEPARTMENT.

GREEN AND DRIED FRUITS.

Exhibitor.	Residence.	Article.	Premium.
J. R. Nickerson.....	Lincoln	Best and largest variety of apples...	.....$15
A. S. Greenlaw	Sacramento....	Best twelve varieties of apples, correctly named.....	.....$10
A. P. Smith.....	Sacramento....	Best twenty varieties of pears, correctly named.....	.....$10
C. W. Reed.....	Yolo	Best twelve varieties pears, correctly named.....	.....$8
I. S. Bamber.....	Placerville.....	Best variety of plums	.....$4
I. S. Bamber.....	Placerville.....	Best variety of nectarines.....	.....$3
J. S. Harbison.....	Sacramento....	Best specimens quinces	.....$5
John R. Nickerson..	Lincoln	Greatest number of varieties of foreign grapes.....	.....$10
John R. Nickerson..	Lincoln	Greatest number of varieties figs....	.....Honorable mention.
John R. Nickerson..	Lincoln	Greatest number of varieties grapes.	.....$10
E. Parsons	Sacramento....	Best one variety foreign grapes	.....$5
I. S. Bamber.....	Placerville.....	Best three varieties figs.....	.....$5
C. W. Hoit.....	Sacramento....	Best one variety figs.....	.....$3
Mrs. E. F. Aiken....	Sacramento....	Best and greatest varieties of dried fruit.....	.....$10
Mrs. E. F. Aiken ...	Sacramento....	Best twenty-four pounds raisins.....	.....$15
J. R. Nickerson.....	Lincoln	Specimens English walnuts.....	.....Honorable mention.
J. R. Nickerson.....	Lincoln	Specimens soft-shell almonds.....	.....Honorable mention.
J. S. Curtis.....	Yolo.....	Best exhibit peanuts.....	$2 and diploma and special notice...
I. S. Bamber.....	Sacramento....	Best and largest display peaches....	.....$4
I. S. Bamber.....	Sacramento....	Best one variety peaches.....	.....$2

SEVENTH DEPARTMENT.

FINE ARTS.

Exhibitor.	Residence.	Article.	Premium.
Norton Bush	San Francisco.	Best painting in oil	$20
Norton Bush.	San Francisco.	Best painting in oil (tropical scene)	$20
Mrs. G. D. Stewart	Sacramento	Best water colored painting	Diploma.
A. A. Hart	Sacramento	Best uncolored photograph	$10
G. W. Baker	Sacramento	Best lithography	Diploma.
J. B. Grouppe	San Francisco.	Best wood and seal engraving	Diploma.
Pacific Business College	San Francisco.	Best penmanship	$5
Mrs. W. E. Brown	Sacramento	Best crayon drawing	Diploma
Mrs. G. D. Stewart	Sacramento	Best pencil drawing	Diploma
P. J. Devine	San Francisco.	Best sculpture (bust)	$10
Wm. Shew	San Francisco.	Best plain photograph, life size	$15
Wm. Shew	San Francisco.	Best plain photograph, medium	$10
Mrs. S. M. Coggins.	Sacramento	Best photograph in water color	$15
Wm. Shew	San Francisco.	Best plain porcelain picture	$15
Mrs. S. M. Coggins.	Sacramento	Best colored porcelain picture	$10
Mr. Serregni	San Francisco.	Best pen drawing	Diploma.
Norton Bush	San Francisco.	Best display of oil paintings.	$20
J. Wise	San Francisco.	Portrait in oil	Special—$10
D. H. Woods	Sacramento	Oil painting (landscape)	Special—$10
W. E. Brown	Sacramento	Oil painting (St. Jerome)	Special—$10
John Cooper	Sacramento	Best flute	$5

MISCELLANEOUS.

Exhibitor.	Residence.	Article.	Premium.
J. Haunberg	Sacramento	Cocoa nut wood case	Honorable mention.
W. Hawk	Yolo	Hens eggs of large size	Honorable mention.
S. P. Taylor	San Francisco.	Blue wrapping paper	Special.
S. P. Taylor	San Francisco.	Brown wrapping paper	Special.
S. P. Taylor	San Francisco.	Various sized wrapping paper	Special.
S. P. Taylor	San Francisco.	Medicated paper	Special.
Mrs. Bessinger	Sacramento	Cocoa nut cake	Special.

REPORTS OF COMMITTEES ON AWARDS.

REPORT OF COMMITTEE ON GOLD MEDALS.

SACRAMENTO, September 11th, 1869.

To the President and officers of California State Agricultural Society:

GENTLEMEN: Your committee, appointed to award gold medals in the several departments, respectfully submit the following:

Second Department.

H. Bernard, Sacramento City—Most meritorious display of carriages.

Third Department.

Capital Woollen Mills, Sacramento City—Best display manufactured woollen goods.

Fourth Department.

N. P. Cole, San Francisco—Best display furniture, manufactured of California woods.

Fifth Department.

I. N. Hoag, Sacramento City—An exhibition of silk business.

Sixth Department.

J. R. Nickerson, Lincoln—Meritorious display of fruit.

Seventh Department.

N. Bush, San Francisco—Oil paintings—landscape.

J. K. DOAK,
DR. THOMAS LOGAN,
ROYAL T. SPRAGUE.

Special gold medals awarded by the Board of Agriculture, at a meeting on the eighteenth of December, eighteen hundred and sixty-nine.

Huntington, Hopkins & Co., Sacramento—Display hardware, cordage, etc.

S. B. Whipple, San Mateo—For exhibition of Hambletonian stock.

REPORT UPON STEAM PLOW.

Conrad Locher, of Oroville—model of steam plow. The committee recommended that this model receive special and honorable mention, for the following reasons:

First—It embraces more real points of utility and usefulness than are embraced in any other plow.

Second—They think it would eventually be of great importance to our agricultural interests by the great good it would work.

Third—The inventors having expended a large sum of money in its perfection.

They would recommend to the Board that, if compatible with the interests of the Association, it be awarded a sufficient sum of money from the treasury to assist the proprietors in completing the invention.

REPORT OF THE COMMITTEE ON SILK.

Your committee finds but one entry that fills the conditions required by the precise wording of the society's offer of premiums, viz: "Best exhibition of the silk business, from the mulberry tree to the silk cocoon, including the feeding of the worms, their eggs, etc."

I. N. Hoag exhibits not only a very large quantity of cocoons of superior excellence, but also the mulberry trees and silkworms in the different stages of their growth, from the eggs of one day old, to the full-grown worms, in the actual process of forming and completing their cocoons; an interesting exhibition to large numbers of persons not yet engaged in the silk business, and entitles Hoag to the society's premium of fifty dollars.

Your committee cannot but regret that only a single premium was offered for the encouragement of this most promising industry, so certainly destined to become one of the greatest importance to the future of California.

If it comes within the province of your committee to recommend special premiums to persons who, at large expense, have placed on exhibition, for the examination and admiration of visitors, superb displays of cocoons and raw silks, and who have stood by their exhibits, giving daily and hourly information regarding the production of silk culture and management of silkworms, and the growth of the mulberry, we would recommend that valuable special premiums be awarded to Edward Muller, of Nevada City, who presents the largest number and variety of cocoons on exhibition, and to Thomas A. Garey, of Los Angeles, who represents the products and silk interests of eighteen different silk growers of Los Angeles County.

Your committee would also make special mention of Joseph Neumann, of San Francisco, the pioneer silk manufacturer of the Pacific coast, who, under every condition of discouragement incident to a new business in a new country, has persevered in his attempts until a certain measure of success has at last attended his efforts. He now presents a large

quantity of silk of his own reeling, of an excellent quality, and being the first to demonstrate the entire practicability of silk manufacture in California, your committee would recommend the award of a special premium to Neumann of no inconsiderable value.

W. WADSWORTH,
I. S. DIEHL,
Committee.

SUPPLEMENTAL REPORT.

In a report intended simply as an announcement of award of premiums, it is quite impossible to discuss the success or merit attached to method of culture, production or manufacture of any product, agricultural or mechanical.

The report of the Silk Committee of the State Agricultural Society was, therefore, of a character distinguished for its brevity. In view, however, of the great prospective importance to our State of this new industry, it may not be deemed amiss if we briefly discuss a few of the main points that seem to be presented by the experience of the recent past in relation to the culture of the mulberry, silkworms and silk.

Commencing with the culture of the mulberry: In all parts of the State, from the gravelly foot-hills to the river alluviums, the mulberry in all its varieties, as far as tried, grows with astonishing luxuriance; but it is a question, admitting of grave doubt, as to the equal value of their leaves for feeding.

Nowhere in Europe do we find the rich, moist lands along the rivers devoted to mulberry culture. The silk growers there have certainly had long experience and the practice of endless experiments with leaves from every variety of soil. They say that leaves grown on rich alluviums are too watery, and not as rich in the nutritive quality necessary to the production of silk, in quantity and quality, as leaves grown upon the high and gravelly lands.

The new Japanese colony in El Dorado County selected their lands with special reference to the production of silks and teas. Would it not be well to make a note of this? And yet in Italy the mulberry is extensively cultivated along the banks of rivers, and it may be that our long and hot summers may cause our lowest alluviums to produce a healthy and nutritious leaf.

It has long been known that saline soils, if only slightly salt, are wholly unfit for the production of healthy food for silkworms. May it not be quite as likely that our strong alkaline soil may prove equally unfit for a healthy production of leaf? It may be said that leaves produced on such soils have shown good results in Sacramento County. Admit it; but may it not be quite as likely that the success was more owing to salubrity of climate and natural vigor of the worms than to any quality of their food.

We know that worms fed last year from leaves of certain localities were healthy, whilst this year they seem quite the reverse; but perhaps owing to other causes than food. We have yet much to experiment upon in California in the matter of silk culture.

The ill success that has attended the feeding of worms the past summer seems to have been confined almost entirely to the low grounds of the valleys, whilst complete success has attended the feeding among the foot-hills.

Another question of interest to silk growers is, the proper season of feeding. Again we say, that nowhere in Europe, or throughout France, Germany or Italy, is the hatching or feeding of silkworms prolonged beyond a certain season.

Commencing with the first growth of the leaf, or as soon thereafter as a continued supply can be relied upon the eggs are hatched and the hatching is continued from day to day until all that are to make the season's crop are produced and set to feeding. The first worms are ready to cocoon about the first of June, the last from the fifth to the tenth of July; this closes the season with all the French or Italian annuals.

If it was desirable, as a profitable application of labor, to prolong the season of hatching and feeding the worms through the heated term of summer and into autumn, would not the silk growers of southern France and northern Italy have long since demonstrated the fact and established it as their system?

Edward Muller, of Nevada City, a successful silk grower, commences early, and closes the season before or during July. His leaves are grown on a dry, gravelly soil, the health of his worms is always perfect, and the quality of his silk unsurpassed.

As a result of this system of feeding, it as apparent that to make silk growing a specialty is a matter not to be seriously entertained by the farmers of California or any other country; but, as an auxiliary, an adjunct to the general production of farms, the silk business will unquestionably, at no distant day, rank among the foremost of our valuable and profitable industries.

Another matter of discussion among silk growers is, as to the propriety of feeding whole or chopped leaves to worms in their earlier stages of growth. If young worms a day old could gobble up the finely cut leaves as a horse does chopped carrots, then it might assist them somewhat in the mastication of their food; but when their mode of eating is quite the reverse of this, and confined to the nibbling of only the edge of these small fragments, it can be of no possible assistance to the worm that they are cut fine. But there is a reason why they are highly injurious. Whenever a leaf is cut or broken, the juice exudes from the cut, and if not at once eaten by the worm, combines with the oxygen of the atmosphere, fermentation commences immediately, producing an acrid substance poisonous to the worm, and if eaten, lays the foundation of disease almost sure to develop itself in some one of the after stages of its growth.

Did space allow us, we would like to give our views on a variety of subjects connected with silk culture, the form and extent of cocooneries, the proper material for the same, the benefit, indeed necessity, of a moist atmosphere during the greater heat of the day, and how to secure it, and the best French and Italian methods of feeding, as derived from personal observation, but we have already too greatly extended this part of our subject.

In regard to the present condition of the silk interest in California, it can safely be said that, though there has been individual failure in a few instances the present season, which failures can be directly attributed to plain and palpable causes, as a whole, the silk interest is prosperous, and with perseverance on the part of our silk growers, they have every reason to look with certainty for a brilliant future.

W. WADSWORTH,
Chairman of Silk Committee

NOTEWORTHY EXHIBITIONS.

A large portion of space was devoted to the various sewing machine companies, and they had each well filled their respective allotments of room with samples of their machines and the work produced by them; and busy operatives kept up a constant clicking, as they elucidated to the spectators the manner of operating, and expanded upon the superior workmanship produced by the machine in which they were interested. The Wheeler & Wilson, Singer, Florence, Grover & Baker, Elliptic, Howe and Weed machines were all represented.

The Pacific Plate Works, of San Francisco, exhibited a case containing fine specimens of silver plating, such as castors, water pitchers, milk pitchers, sugar bowls, etc.

The Capital Woollen Mills, of Sacramento, had on exhibition numerous grades of blankets, from the coarsest to the finest varieties, including a pair, of which each is one hundred and thirty inches wide and one hundred and seventy inches long, intended for the Salt Lake trade. Why such large blankets are peculiarly needed for the Salt Lake trade we know not. Probably the intention is to make them large enough to cover a husband and wives; but if this is the object, at what dimensions will they stop? These mills also exhibited fancy cassimeres and flannels, and a roll of beaver cloth of their own manufacture. At the present time they are only running four sets of woollen machinery, this being one-third of their capacity. They expect, however, to soon enlarge their operations.

Norton Bush, the gifted young California artist, contributed quite a number of his beautiful pictures, including "Chagres River," "Glimpse of Tropic Land," two "Tropical Sketches," "Lake Tahoe," "Donner Lake," "American River, near the Summit," "Bay of Panama," "Castle Rock," and "Sketch in the Straits of Carquinez." His tropical pictures were especially meritorious, and received high encomiums from the critical. The gorgeousness and indolence of tropic life are favorite subjects with Bush, and in their delineation he excels. The two small oval framed pictures, entitled "Tropical Sketches," were gems in their way.

J. Wise, of San Francisco, exhibited several fine oil portraits of gentlemen and ladies, as samples of his skill in that art.

William Shew, of San Francisco, contributed a large collection of photographs, including ivorytypes, pearl pictures, etc., most of which, through their constant presence at our State fairs, have become quite familiar to our citizens. The pictures are very life-like, and bear very favorable testimony to the quality of the work produced at this gentlemen's gallery.

Mrs. Sarah M. Coggins, of Sacramento, exhibited some beautiful specimens of her skill with the brush in coloring photographs. The samples on exhibition were very delicately and truthfully tinted, and worthy of close attention.

Mrs. W. E. Brown, of Sacramento, had on exhibition several very fine oil paintings, including "Donner Lake, Sunrise," "Donner Lake, Sun-

set," "Medora," "St. Jerome," and "Winter." They all evince care and talent, and received much praise.

Howard Campion, of Sacramento, showed "A Sporting Scene," "Portrait of General Grant," and "Emerald Bay, Lake Tahoe." A great deal can be truthfully said in favor of all his pictures; but the portrait of General Grant, whatever may be its merits in an artistic point of view, does not convey a correct idea of the features and figure of the present President. The expression of the countenance is not faithful to life, and Grant is not so large a man as the picture would lead us to imagine. "Emerald Bay" we prefer to all the rest; it is a pretty, evenly-toned picture, and possesses the attribute of merit of being pleasing to look upon.

Mrs. G. D. Stewart, of Sacramento, contributed some water-color paintings, including "Sacramento City Cemetery," "A Seaside Sketch," and "Balmoral Castle." Also, two crayons, "Pagan Rome" and "Christian Rome." The two latter, especially, are very creditable, but they all deserved close inspection.

A full-length needlework picture of General Washington, made by the pupils of St. Joseph's Convent, in this city, was very much admired, by the ladies particularly, although its excellence is sufficiently apparent to be appreciated by all. Quite a knot of spectators was almost always congregated in front of it during exhibition hours.

T. Rogers Johnson, of San Francisco, exhibited a case of his finely worked regalias and emblems of the Odd Fellow, Masonic, Good Templar and other Orders.

Drs. Folleau & Mabon, of San Francisco, had a show-case containing orthopedic apparatus for the hip disease, improved surgical appliances for ladies, orthopedic apparatus for club feet, orthopedic apparatus for angulaire curvature (Potts' disease), artificial limbs and patent improved trusses. The collection was of special interest to medical and surgical gentlemen, and to those who are unfortunately afflicted with the various ailments which these contrivances are designed to alleviate or cure.

Henry & Cushing, of Sacramento, exhibited the Crandall patent spring bed, for which it is claimed that it is an open, self-ventilating and wholesome bed; that its springs are coiled in couplets, and, thus rendered self-supporting, will not uncoil or cripple down. It is said to be especially adapted to hotels and lodging-houses, from its lack of accommodations for vermin.

N. P. Cole & Co., of San Francisco, made a fine display of furniture, including dressing bureau, sofa, extension table, parlor set, bookcase, marquetry cabinet and Pompeiian marquetry table. The two latter were very elegant specimens of rich furniture.

J. Hopley, of Sacramento, also had a very creditable display of furniture, including dressing bureau, sofa, lounge, parlor chairs, centre table and other parlor furniture.

Laufkotter & Haig, of Sacramento, exhibited in the machinery department an improved wash-basin and bath-tub, which are very complete in their way. The basin and tub are both filled from the bottom, and cannot overflow. No pipes are visible, and repairs can be made with much more facility and convenience than in the case of the ordinary tubs. These article were well worthy of examination.

The large-sized mirror which, on account of its dimensions and clearness, had attracted so much attention in the upper hall, was from the firm of Cameron, Whittier & Co., of San Francisco.

Mrs. M. A. Moorhead, of Sacramento, in the way of feminine orna-

mental handiwork, showed specimens of shell-work, autumn leaves, and an ingenious bouquet made of fish scales—scales of the shad. If the card affixed did not tell the story, few would be able to guess the material out of which this bouquet was arranged. She also exhibited a lamp shade made of perforated Bristol board, underneath which is placed common colored paper. When placed upon a lighted lamp, it makes as pretty a shade as could well be devised.

Mrs. C. H. Ross, of Sacramento, exhibited a chaste and very beautiful phantom bouquet, which received many commendations from the fair sex.

Mary Ann Fleming, of Marysville, thirteen years old, showed several specimens of ornamental work, including a moss landscape picture.

Miss Mattie Curtis, of Yolo, eight years old, contributed two frames containing a hair work wreath and worsted flowers, both of which would do much credit to even the oldest and most skilful of her sex.

Miss Lottie Hoffman, of Sacramento, exhibited a very pretty piece of embroidery on black cloth

Mrs. J. L. Hummel, of Sacramento, as the product of her skill, showed some very fine samples of silk embroidery. Miss Agnes Hummel, twelve years old, also showed, in the same case, samples of very creditable needlework.

Miss Sophia Shaffer, of Lower Lake, exhibited a very beautiful specimen of raised embroidery, the figures being that of a parrot perched on a twig, and surrounded by flowers.

Mrs. C. R. Stephenson, of Sacramento, exhibited a pretty afghan carriage robe, containing four hundred and sixteen pieces.

Mrs. Mary A. Hollister, of San Francisco, showed a knit shell-work bedspread, containing one thousand seven hundred and sixteen pieces, each piece being sewed together by an overhand stitch, and knit with common knitting needles.

Miss Mary Allmond, fourteen years old, exhibited some very creditable specimens of her own needlework.

Mrs. H. Kuhl, of Sacramento, showed a case containing children's apparel and specimens of stamping, and also a beautiful afghan, crocheted and worked by herself.

Misses M. E. & S. E. Coates, of Sacramento, exhibited some very fine specimens of ornamental needlework, including some exquisite raised embroidery.

J. C. Meussdorffer, through his agent in Sacramento, exhibited a case of black beaver, silk beaver and nutria hats, and silk hats of various fashionable styles. He also exhibited a new style of hat, called the "Adherent," which was noticeable for its extreme lightness and adaptability to warm climates, and the comfort of which should render it fashionable here. The silk hats especially were of a fine texture and gloss.

R. W. Jackson, of Sacramento, contributed a case of beautiful pearl, ivory and abelone shell jewelry, including rings, sleeve buttons, buckles, jewel cases and full sets of jewelry. The pretty and modest moss agate, in various settings, was also displayed in his case. These articles are all manufactured in Sacramento, and evince good taste and superior workmanship.

James Carolan & Co., of Sacramento, had on exhibition several cases of fine goods in their peculiar line, such as sporting materials, locks, etc.

S. P. Taylor & Co., of the Pioneer Paper Mills, of Marin County, showed several bales of different varieties of wrapping and other paper.

P. Kelly, of San Francisco, contributed a couple of cases containing some very fine ladies' and gentlemen's boots and shoes.

Schroder, Albrecht & Co., of Sacramento, made a display of cakes and confectionery, and a very pretty ornament, made by A. Albrecht, of sugar.

A. Ellison, of Marysville, exhibited the Buckeye plough, for which he claims superiority of leverage over all others, the lever giving the plough a dip of from one to nine inches. The standard is high, and, it is claimed, can pass over the highest stubble without catching a straw.

Treadwell & Co., of Sacramento, exhibited a large variety of agricultural implements and machines of the latest and most approved styles.

Baker & Hamilton, of Sacramento, also showed a number of agricultural machines and implements of various and improved patterns. Their exhibition was of great interest to all agriculturists.

Purington & Clark, of Marysville, exhibited a grape crusher and stem separator, patented March thirtieth, eighteen hundred and sixty-nine. It is asserted that the machine will separate the stems and crush the grapes without breaking or bruising the seeds, allowing the pulp to fall into a vat or tank, while the stems are entirely deprived of the berries and carried away, by the action of the beater, through the hinged door at the end of the machine. It was very highly spoken of by the Committee on Agricultural Implements at the recent Northern District Fair.

W. T. Garratt, of San Francisco, exhibited a couple of small-sized cannon, and the large bell whose loud tones gave the signal for clearing the halls at the closing hours.

H. M. Bernard, of Sacramento, had on exhibition, in the lower hall, several very superior buggies and wagons, and carriages of various descriptions.

J. A. Mason, of Sacramento, also exhibited several very commodious and finely finished buggies and wagons.

David Bush, of Sacramento, made a very fine display of gas fixtures and plumbing work. Among his gas fixtures was Gleason's noiseless argand burner, which, by means of a valve, permits the supply of gas to be regulated as desired, and which gives a much brighter light than we have ever seen obtained by any other burner. It is also claimed that it consumes from fifteen to twenty per cent. less gas than any other burner, in producing the same degree of light.

Miss Juliana Bayer, of Sacramento, exhibited several very pretty specimens of beadwork. She also exhibited raised worsted embroidery work; but the latter did not equal the former in taste or skilful execution.

Mrs. Bigley, of Sacramento, exhibited a shell-work tower, constructed with a great deal of skill and taste.

P. J. Devine, of San Francisco, placed another of his beautiful busts on exhibition, as a companion to "California." The bust was that of a lady in the full flush of womanhood. Though she was not beautiful, when measured by the strict rules of art, nobility of soul mirrors itself forth in the large, expressive eye, beaming with benevolence and charity, and betokens a woman who, though pure and guileless herself, realizes fully that "to err is human, to forgive divine."

Miss Anna Smith, of Marysville, exhibited a piano cover of raised embroidery work on black cloth, which, in our judgment, was the prettiest piece of work of the kind in the fair.

The large mirrors from the firm of Whittier, Fuller & Co., of San Francisco and Sacramento, were worthy of commendation. The mirrors are of imported French plate, and were polished and silvered at the factory of the firm in San Francisco, thereby saving duty and lessening

the liability of breakage; and it is claimed that the brilliancy of these mirrors is superior to that of those which have undergone long voyages. The quicksilver used was produced in this State.

E. C. Bickford & Co., of San Francisco, exhibited Packard's patent traction gate, which runs on two rollers, first and second space. The gate can be lifted entirely off, or raised to any desired height, so as to let small stock pass under.

Friend & Terry, of Sacramento, exhibited a giant board, measuring six feet and a half in width and about thirteen feet in length.

The Parrish Soap Works, of San Francisco, exhibited a large quantity of a new kind of soap, called Kane's Condensed Soap, for which is claimed cleansing powers superior to any other soap.

J. Weichart, of San Francisco, exhibited a new invention to attach sections on reaping and mowing bars without rivets, for which it is claimed that it enables sections to be taken off, ground in better style, in much less time, and without any danger of getting the bar out of shape.

P. J. Devine, of San Francisco, exhibited a beautiful ideal bust of "California." The figure was that of a young, hopeful, earnest maiden. The placidity of her countenance betokens that she realizes that there is a grand future before her, while her thoughtful eyes and brow show that she possesses uncommon depth of feeling.

M. Haseberg, of Sacramento, showed a box of mammoth sized California almonds in the upper hall, near the cocoons. These almonds are as large as ordinary hen's eggs, but, of course, are flatter.

David F. Hall, proprietor of the Silkworm Home Cocoonery, contributed a very pretty basket of flowers made from perforated cocoons by Mrs. V. E. Howard, of San Gabriel, Los Angeles County. These flowers were quite an attractive novelty.

W. Fern, of Sacramento, exhibited in the lower hall several fine specimens of different varieties of potatoes, beans, cabbages, squashes, apples, tomatoes, etc. We had sufficient curiosity to have some of these weighed in our presence, and, picking up a tomato, found that it weighed one pound four and a half ounces. One of the apples, a very little larger than the average of its companions in a box, weighed one pound and three-quarters, and was five inches in diameter. What nice apples these would be for boys to take to school; how many "bites" they could afford to give away! The scale showed that a sugar-beet placed upon it weighed fifty pounds. "That can't be beat," exclaimed an enthusiastic looker-on. But it was.

George Cone, of Sacramento County, had in the lower hall a number of large squashes and fine muskmelons. The largest squash on his stand, and the largest in the Pavilion, weighed one hundred and thirty-five pounds.

Ira S. Bamber, of Placerville, in the lower hall, exhibited several plates full of pears, plums, grapes, apples, peaches, figs, prunes, nectarines, etc The peaches were very large and luscious looking, and three taken promiscuously from the lot weighed two pounds and two ounces.

E. G. Bangham, of Lassen County, exhibited, in the lower hall, specimens of patent pruning shears. By the application of double leverage, a great amount of pressure and labor is saved, and a smoother cut can be given than by ordinary shears.

George R. Cramer exhibited, in the lower hall, a patent dumping wagon. By means of a lever, the control of which is convenient to the driver's hand, the bed of the wagon is lifted by an upward wheel upon

which it slides, and the load is dumped quickly and without any labor, further than the light pressure upon the lever.

Laauser & Schafer, of Sacramento, showed some very creditable specimens of cooperage in the lower hall, including a wine cask of the capacity of a thousand gallons, and two smaller ones of eight hundred and five hundred gallons capacity, respectively.

I. N. Hoag, of Yolo County, made a very interesting exhibition of the silk business, from the mulberry tree to reeled silk. The collection included four or five different varieties of cocoons, worms two days old, ten days old, and worms feeding and spinning. Of a hybrid variety of cocoons, Hoag has raised one million five hundred thousand. A bale of reeled silk produced by his cocoons was shown in Neumann's collection. Watching the animals in their various stages of progress afforded amusement to those who are merely curious, while those who were more directly interested in the industrial greatness of California bestowed upon the exhibition very close observation, in order to learn the lessons it imparts

Joseph Neumann, of San Francisco, the enthusiastic and indefatigable pioneer silk manufacturer, exhibited forty pounds of raw silk in hanks, reeled in California, out of which he intends to manufacture two national flags, one for the National and one for the State Capitol, each to be twenty by thirty-two feet. Neumann informed us that his factory in San Francisco is now in successful operation. The spinning department is running three hundred and fifty spindles, and four hands are employed in reeling raw silk in the reeling department. Judging from the samples of cocoons exhibited in the Pavilion, Neumann expected that from four to five thousand pounds of raw silk will be produced in California this year.

Strahle & Hughes, of San Francisco, exhibited a fine California oak billiard table, with Phelan cushions, and several slabs of polished California wood, showing the high polish which even some of our most common woods are capable of attaining.

Ed. Muller, of Nevada City, showed a fine case of cocoons and samples of floss silk, including the first and second crops of a hybrid variety of cocoons, French Annual, Japanese and other varieties.

Rev. I. S. Deihl contributed a very interesting cabinet, containing a Cashmere cape, specimens of Cashmere wool, Oriental embroidery, Oriental silkwork from Bagdad, Angora goats' cloth, Angora socks, Cashmere tassels, etc. All the articles were well worthy close inspection.

The Pacific Pottery, of Sacramento, exhibited samples of their manufacture in the shape of jars, demijohns, pipes and fire brick.

Brittan, Holbrook & Co., of San Francisco, in the lower hall, made quite a large and fine exhibition of Peerless and other stoves and ranges, and kitchen ware and utensils of various descriptions, of copper and tinware.

Gillig, Mott & Co., of Sacramento, also exhibited, in the lower hall, the Buck and Good Samaritan cooking stoves and ranges, and various kitchen utensils of tin and copper, and the Danford lamp.

R. C. Terry & Co., of Sacramento, were not behindhand, but also showed, in the lower hall, ranges of various kinds, cooking utensils and lamps.

SILK CULTURE.

AN ADDRESS PREPARED FOR THE PIONEER SILK-GROWERS' ASSOCIATION, AND DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, BY INVITATION, SEPTEMBER TENTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Rev. I. S. DIEHL.

Gentlemen and Members of the Society:

In compliance with your honored invitation to address this association on the silk interests, especially as seen and learned by me in my travels and observations in Asia and Europe, I come to add my mite and contributions of this ancient, profitable and promising industry of the Oriental and Old World to the many and multiplying sources of wealth of this Occidental and Golden State, which I delight to honor as the El Dorado of my adoption and choice; and here it may not be amiss, but well, to give a brief summary of the history and progress of this old but here new and rising industry on this coast, and encourage, as far as possible, the pioneers now enlisted. Dean Swift says, "he who makes two blades of grass to grow where one grew before, is a benefactor," and so may and will you be hailed in giving new industries and sources of wealth, labor, comfort and blessings to your State and people. We are at once carried back some three thousand four hundred years or more to the "Flowery Kingdom" or Empire of China, and in its antiquities find the first and best accounts of silk, the silkworm and mulberry tree, rearing silk manufactures and their productions, with cuts, drawings, diagrams and pictures quite amusing and interesting. The history of silk culture is lost in antiquity; but by oldest writers—Aristotle, Horace, Virgil, Ovid, Pliny—and general consent, China is generally conceded to be the home and originator of this industry, four thousand five hundred and sixty-seven years ago, or two thousand six hundred and ninety-eight before the Christian era. The Emperor Haw-Hi has the honor, in the Chinese annals, of employing silk in the manufacture of musical instruments three thousand four hundred years before Christ, called Ci. The first silk tissues are said to have been invented by the Empress Ho-Sing-Chi, which places her among the Chinese divinities, under the name of San Thson, or First Promoter of silk industry, and whether this Chinese Empress is a myth or not, the Chinese Empress and people still offer annually solemn sacrifices to her memory; and one of the many interesting ceremonies to be seen is for the Empress to visit the silkworm

nurseries, and laboring with her own hands to encourage the people and honor this great industry.

The silk industry embraces seven special branches: The rearing of the silkworm trees, called silkworm nurseries. The trees mostly used are the mulberry family, of which there are four prominent varieties—morus multicaulus, morus alba, morus moretti and morus niger. The mulberry most commonly used is the morus multicaulus, established wherever the trees can best be raised, where the temperature is regular and moderate, although artificial climate may be produced by heat. The best temperature is from seventy to seventy-five degrees Fahrenheit. These mulberry trees, as we generally found them, are planted in rows in Asia—not unlike our corn and cotton fields—and again in squares, the rows being from four to six feet wide, the trees from one to two feet apart. These are carefully cultivated, and cut or trimmed down, first to the ground, subsequently to a stem or stump two to five feet high, which is thus far more productive and prolific, easier managed, more valuable, saving much time, labor and expense in gathering leaves; and thus two and three crops can be and are obtained annually, leaving a few occasionally to grow up at intervals to bear fruit for the birds to feed upon, and thus protect the young ones, grape vines and other fruits. This has proved highly beneficial. Sometimes they plant olive trees, from ten to fourteen feet apart, to protect and shelter the tender mulberries from the sun.

The trimming down of the trees, although giving a desolate appearance for the time, it is claimed, produces more nutritious branches and leaves, and are fed to the worms on the branches, instead of stripping leaves, as most breeders do here.

The similarity of climate between that of Asia and California leads to a similarity of rearing the trees and worms, and, in fact, this plan has naturally been adopted here as that best calculated to produce the greatest amount of silk with the least labor and greatest profit.

The next is breeding of silkworms, which, to be successful, depends upon good, pure eggs, fresh mulberry leaves, care and attention.

In the early days of the Roman Emperors, the silk production of China was only second to the culture of rice by which to live, and Marcus Aurelius sent an embassy, or commission, to China, to investigate and to introduce it to his empire. Babylon, Persia and India were largely engaged in the silk culture from time immemorial. The rich and costly Babylonian garments were made of silk, worked in silver and gold, for which the Roman Emperors, according to Herodotus, paid from forty thousand dollars to one hundred and forty thousand dollars; and for the stealing of one of these "goodly garments" Achan lost his life. These rich, lustrous silks were interwoven with the rich, silky fleece of the celebrated Angora, Kirman and Cashmere shawl goats, and with gold. Portions of Persia, Babylonia, Assyria, India, Asia Minor and Syria, through which it passed, were, and are still, centres of silk culture and silk manufacture. Damask, from Damascus, a specimen of which I hold in my hand, was raised and manufactured in Damascus, as well as these beautiful silk embroidered specimens, and to this day you see them rear their silk amid the desolate ruins of Babylon, and over those historical lands, almost under the shadow of the tower of Babel, or Birs Nimroud, itself, as they did three thousand years ago.

The commerce of silk was carried from Cathay to China two hundred years B. C. into India, Persia, Greece and Italy, and, almost strange in this changeable world, the name has remained almost the same, with

very slight modifications, through the centuries and various languages, viz: In China, *Si* or *Se;* Mongol, *Sirke;* Mantchor, *Sirche;* Russian, *Chek;* French, *Soie;* Spanish, *Seda;* Italian, *Seta;* German, *Siden.*

So important and honored was this branch of industry and wealth, that the Emperor encouraged the rearing of mulberry trees and plantations, by rich rewards, honors, promotions, and protected them by stringent decrees, and severely punished their destruction. Other countries and rulers have shown similar interest, by public and pecuniary encouragement, and we are pleased to note here the laudable acts of your own State for the encouragement of silk culture in California as among the wisest and most far-seeing of your State Government. While they may take from your State treasury a few thousands of dollars now, they will add, in a very few years, to the general wealth of the State millions, and more than return, in taxes, to the treasury, the sums now drawn from it, and materially add population, wealth and industry, which is wealth. Formerly the exportation of eggs, trees and worms was forbidden, under penalty of death, by China and Japan, designing to monopolize the business.

In the time of Alexander the Great, silk was worth its weight in gold, and was woven so thin that the women of Greece were scarcely covered by its delicate tissues. Julius Cæsar introduced it into Rome, replacing the coarse cloths and coverings of those immense amphitheaters with the silks of the Orient.

The first silkworm eggs were introduced into Constantinople, or to the west from China, by two monks, in hollow canes, induced by rich gifts by the Emperor Justinian, 552 A. D. The Moors imported them from Greece, Italy and Cordovia, early taking up this industry; thence it spread over Europe to America and California.

The history of silk in this country is quite interesting, and may be found, in fragments, in our agricultural reports; in the report of silk and silk manufactures at the Paris Exposition, eighteen hundred and sixty-seven, by E. C. Cowdin; report of I. N. Hoag, late Secretary of your State Society; by Wilson Flint, and by Louis Prevost, the pioneer in the silk business in California, now gone from labor to refreshment and reward, and to whose name, faith, enterprise and perseverance we stop to pay a merited tribute of respect and honor, while it is to be hoped the people or State will remember those left behind him in a material and substantial manner, as an evidence of their appreciation of his labors, worth and sacrifices.

The early colonists raised the mulberry, encouraged by King James I. The coronation robe of Charles II. was made of silk raised in Virginia; while yonder hangs the silk, raised in California, for a silken flag, manufactured in your own State, for your own Capitol, to be soon unfurled from its lofty dome to kiss the breezes of this delightful clime.

In seventeen hundred and eighteen, silk was introduced into Louisiana. Private gifts co-operated with Acts of Parliament and land grants to plant mulberry trees and raise silkworms, which stimulated and encouraged the enterprise.

In seventeen hundred and fifty-five, a beautiful silk robe was made from Georgia silk, worn by Queen Caroline on State occasions, and the time is not far distant when the queens of America will be robed in the silks of California.

In seventeen hundred and forty, cocoons were exported commanding high prices. A large silk establishment was erected at Savannah, consuming from ten thousand to twenty thousand pounds of cocoons annually.

Then the silk culture was one of the most profitable industries in the colonies, but Government bounties were withdrawn and it drooped. Cotton and tobacco raising took its place, and with tobacco and rum manufacturing the enterprise was virtually killed.

The Carolinas, Virginia, Pennsylvania, New Jersey, Connecticut and Massachusetts all still struggled on, though feebly, and we find the productions long years afterward as follows:

In eighteen hundred and forty the United States raised sixty thousand pounds, valued at two hundred and fifty thousand dollars; in eighteen hundred and forty-four, four hundred thousand pounds, valued at one million five hundred thousand dollars; in eighteen hundred and fifty, fourteen thousand seven hundred and sixty-three pounds; in eighteen hundred and sixty, annual production, five million dollars; Philadelphia and New York produced two million three hundred thousand dollars; and a favorable improvement is reported ever since, and steadily increasing.

The importations of silk into the United States are given as follows: In eighteen hundred and forty, eight million six hundred and nineteen thousand nine hundred and eighty-six dollars, or fifty dollars and thirty cents consumption per capita; in eighteen hundred and fifty, seventeen million seven hundred and thirty-one thousand six hundred and eighty dollars, or seventy-six dollars and fifteen cents; in eighteen hundred and sixty-four, thirty-seven million four hundred thousand two hundred and five dollars; in eighteen hundred and fifty-six, thirty-four million three hundred and fifty-three thousand three hundred and thirteen dollars, or eighty-eight dollars and eighty-one cents; in eighteen hundred and sixty, over forty million dollars.

Well may we inquire why these large importations of silk which our own country, with its many glorious facilities, could all produce herself. But now let us look a moment at the production of silk generally. The silk interests are divided into two important branches. The rearing of mulberry trees and cocoons is purely an agricultural industry. Its various transformations and manufacture is a mechanical industry. The Oriental nations employ themselves in general with all the transformations of silk, from the culture of the mulberry, the breeding of the worm and manufacture of tissues. In Asia all, heretofore, has been handiwork. Now France and Italy, with their improved machinery, are fast entering Asia and manufacturing there, leaving the native population to raise the worms. Europe, and especially Russia, has greatly benefited by the experience and knowledge of Asia. Peter the Great first introduced the culture into Russia, which is now making rapid progress, and has increased threefold since the annexation of trans-Caucasian Asia. In eighteen hundred and sixty-five Russia produced about one million dollars worth of silk, exporting three hundred and twelve thousand dollars worth. A large traffic is carried on all through Asia, in eggs, graines, cocoons, silk and waste, mainly by the French and English.

The following is near the present product of silk in the world, two hundred and twenty-five millions, three hundred and eighty thousand dollars: Asia, one hundred and fifty million dollars; Europe, seventy-five million dollars; Africa, two hundred and fifty thousand dollars; Oceanica, one hundred and thirty thousand dollars; America, eighty thousand dollars to one hundred thousand dollars. Divided and raised as follows: China, eighty-five million dollars; Italy, forty million dollars; France, twenty-six million dollars; India, twenty-five million dollars; Japan, eighteen million dollars; Turkey, ten million dollars,

Turkestan, two million dollars; Islands of the Levant, five million dollars; Spain and Portugal, three million two hundred thousand dollars; Persia, six million dollars; Syria, two million dollars; Germany, one million four hundred thousand dollars; Africa, two hundred and fifty thousand dollars; America, one hundred thousand dollars. By which we see that we stand last in the list of this great industry of two hundred and twenty-five million dollars. The last few years the production of Europe has declined, on account of the malady, while that of Asia has increased. And yet the Asiatic silks are not as valuable as the European or California silks.

A century ago the Levant, Persia, Italy and Spain produced five-sixths of the silk manufactured in France. In seventeen hundred and eighty-nine, France produced one million pounds of raw silk, and manufactured three million five hundred thousand dollars worth of silk goods In eighteen hundred and twelve, five million dollars; importing six million seven hundred and fifty thousand dollars worth of silk. In eighteen hundred and twenty, ten million dollars; manufactured, twenty million dollars. In eighteen hundred and thirty-nine Lyons employed one hundred and seventy thousand workmen, manufacturing forty-six million three hundred thousand dollars worth of silks. In eighteen hundred and fifty France grew twenty-eight million dollars worth of silk, manufacturing fifty million dollars worth, importing twenty-two million dollars worth and producing seventy-five million dollars worth of silk goods therefrom. In eighteen hundred and fifty-five she sold one hundred and six million five hundred thousand dollars worth of silk goods; exported seventy-one million dollars worth; employed five hundred thousand persons in silk manufacture. In eighteen hundred and sixty France manufactured one hundred and forty million dollars worth of silk goods, exporting one hundred and ten million dollars worth. The United States purchased from France, in eighteen hundred and fifty-nine, twenty-seven million six hundred thousand dollars worth of silk goods; in eighteen hundred and sixty, twenty million eight hundred thousand dollars. The importations thereafter were checked by the rebellion.

These figures and facts are suggestive of the brilliant future before California, in this branch or department of wealth. With her incomparably superior climate and great area to grow silk—from the Coast Range to the very tops of the Sierras—from San Diego to Oregon—she can fully compete with any country; at least raise silk enough for our own consumption—from forty to sixty million dollars worth annually—which would be far more valuable than her gold fields; healthier, if not more pleasant and moral, and quite enough to enrich and amply reward all engaged.

The product and manufacture of Great Britain are given as follows: In eighteen hundred and twenty-five, England had twenty-five thousand silk looms; in eighteen hundred and fifty-five, one hundred and ten thousand, consuming five million five hundred thousand pounds of silk, producing forty-five million dollars worth of silk goods; in eighteen hundred and sixty, her silk manufactures were ninety million dollars, consuming nine million four hundred and twenty thousand four hundred and seventeen pounds of silk, and in eighteen hundred and sixty-two, consuming nine million seven hundred and six thousand two hundred and two pounds; in eighteen hundred and sixty-six, five million two hundred and seventy-three thousand seven hundred and sixty-seven pounds. Italy produced, in eighteen hundred and fifty-five, sixty million dollars worth of silk. Spain produced, in eighteen hundred and forty-two,

two million pounds of silk. Prussia is rapidly increasing in silk manufactures In eighteen hundred and thirty-one, she had nine thousand looms; in eighteen hundred and thirty-seven, fourteen thousand looms; in eighteen hundred and fifty-five, twenty-five thousand looms; in eighteen hundred and sixty-five, forty thousand looms Switzerland produced, in eighteen hundred and fifty-eight, twenty million dollars of silk goods. The Paris Exhibition gave a splendid specimen and contrasts in this great work, and free opportunities for study. These figures are more eloquent than words. Of the real productions of China and the Asiatic silk countries, we know but little. A large proportion of their people clothe themselves in silk. China imported to England, in eighteen hundred and fifty-five, ten million pounds of silk. India, Persia, Turkey, Asia Minor, Syria, etc., produce vast quantities of silk, of which no reliable accounts can be had or given.

THE SILKWORM AND ITS VARIETIES.

The first and principal is the *Bombyx mori*, or common silkworm of Asia, because most generally used in producing the best silk. It is born in spring here, from the fifth of April to middle of May; is of a white cream color, with a brown facia, when first hatched, but changes its color four or five times, and attains its full growth in six weeks, and increases in weight seventy-two thousand times. In June or July it establishes the workshop of its wonderful manufacture, and in seventy-two hours of unremitting toil it produces a thread of from four hundred to six hundred and one thousand yards long. Here, in its inclosure, it sheds its skin, and finally comes out a chrysalis, bearing but a slight resemblance to a worm. After two weeks or so, according to temperature, the skin of the chrysalis opens and, changing again, it comes out a butterfly, lays some hundreds of eggs and dies.

Ailanthus Silkworm (*Bombyx Cynthia Vera*)—This is also a peculiar China worm, is cultivated in the open air, lives on the ailanthus tree, produces an elongated cocoon of a reddish color, making a strong and desirable tissue. This worm has been and is successfully raised at Brooklyn (New York), and Baltimore (Maryland).

This worm would do admirably in California. The trees could be grown to any extent; when once planted would spread all over the country, and is worthy of a trial here. The experiments in France have been quite successful, and given a new, increased and growing importance to the business.

The Castor Oil Plant silkworm (*Bombyx Arrandia*)—This species we found in India—lives in both a wild and domesticated state, upon the common castor oil plants and other vegetation. It has been successfully introduced in Europe, by living cocoons, in Algiers, Brazil, etc., or wherever the castor oil bean will grow. It would succeed admirably in southern California. The fabrics are durable, supple and valuable, but lustreless.

The Tusseh silkworm (*Bombyx mileta*)—This wonderful insect lives also in India, in the woods, in hot regions. It feeds on the jujube tree. It makes a beautiful silk, and is valuable; but its introduction into Europe has not been successful.

The wild silkworm of Japan (*Bombyx yama may*)—This worm feeds on oak leaves; is reared in France. I have seen it in Persia and Mesopotamia, and it will succeed here. It does not require great heat. Its cocoon is a greenish yellow. The silk is easily reeled.

The Japan worm and its hybrids are successfully reared here, and may be seen in the Pavilion (*Bombyx cecropia*); is indigenous to our country, from Louisiana to Virginia; lives on elm and willow, and produces coarse silk.

A fine collection of cocoons are before us. The male and female cocoons differ by their shape and size. The male is smaller, with a cavity upon the neck. The female is more like a bird's egg. The heaviest cocoons offer the greatest chance of affording the best productions. Divide into two parts, weigh both, and find average weight. Sometimes two worms are in one cocoon, and are then called "doubles." This sort of produce is always inferior, and should be thrown out, as their product is only one-third the value of the normal product. An apparatus was sh wn at the Paris Exhibition, by an Italian, to prevent doubles, and he is endeavoring to bring his contrivance into general use. The apparatus consists of cells, made of very light wood, each one of which has the bulk necessary for a single grub, which prevents two grubs getting into one, and making a defective product, and prevents consanguinity, which is given as one of the causes of the rapid deterioration of the breed. The female is removed when the coupling is over, and made each to lay in the cell reserved, in such a way as to weigh separately the eggs of each laying. Each weighing should be sixty or seventy grains of two and one-eighth pounds of cocoons, each grain to contain from thirteen hundred and fifty to fifteen hundred eggs, average. The eggs to be preserved for reproduction are carefully moistened, when the grub opens the lengthened extremity and issues out. These grubs are collected in pairs, male and female, and fecunded before laying eggs. These cocoons are placed on paper, covered with a coating of paste. Female cocoons are ascertained by being heaviest, and are kept on separate sheets. When the moths appear, they are seized by the wings and placed on stretched cloths. Sheets of paper are placed on screens inclined, on which the females are laid and lay their eggs. These sheets, covered with eggs, are hung on wires in a cool room or cellar, which is not warmed, and there remain until the hatching season. This is important, to keep the eggs healthy.

Having given a rapid survey of the method of rearing silkworms, we add a few words in reference to winding the cocoons. This is very primitive, but requires great care and unremitting attention, and great delicacy of touch. Women are generally used for this purpose, who, standing before a sort of loom, have a basin of hot water, into which she casts her cocoons and moves them about to remove the gummy substance which sticks the silken threads of the cocoons together. She beats them with a small birch broom, and then attempts to make up a staple by uniting the ends of fine cocoons. These are held in a mass and are introduced into the hole of a frame for this purpose. Two staples are made at once, on the right and left hand. She brings them together, crosses them, rolls them and twists them several times, the one on the other; then keeps them apart, passing them into a hook, from which they twist into a hank separately on a wheel. The two threads thus twisted are drawn close together, compressed and become one, made into a round roll as before you. This is the reeling of silk, as we have watched the process in Asia and France. Some of these threads are six miles long. The process of putting raw silk into threads, for the different kinds of weaving, is called throwing silk.

The manufacture of silk successfully in California is only a matter of time and labor. Already a commencement has been made, and your

pioneer weaver is present. The material needed and now raised will soon be supplied from your own cocooneries; and you are most favorably situated for its best importation from China and Japan to California, where materials of cheap living will enable them to labor cheaper than on the Atlantic border or Europe. Silk factories employ from one hundred to one thousand laborers, giving steady employment, which will do much to populate California. From fifty thousand to seventy-five thousand persons are employed in the Atlantic States, in this branch, who may find employment here; but as the manufacturing is premature, and an important branch by itself, we dismiss it. As to you, Californians, the present is the rearing of the mulberry and cocoons, pure fresh eggs for which a demand has sprung up abroad, from the failure and silkworm disease in Europe and spreading to Asia. France lost twenty million dollars by this malady last year, so the demand for pure silkworm eggs will increase, and are worth twenty-five dollars to thirty dollars per pound. I paid five dollars per ounce in Asia, to send to this country. Pure eggs are only to be had in Japan and South America; and there fears are entertained, and signs of the disease appear.

This silkworm disease or malady is to be dreaded, and a preventive is better than a cure. Various theories have been given. Some ascribe it to the mulberry; others say it is like the cattle disease or Asiatic cholera; others say forced breeding and breeding in and in; want of proper care and ventilation. Investigation discovers spots of a peculiar form and appearance in the tissues of the diseased worm at the bottom of the digestive canal, called corpuscules. They are oval, transparent, smaller than the globules of human blood. Foreign exchange is desirable where it exists. Contact does not produce disease, but feeding on leaves washed or infected with corpuscules water. The disease is spreading rapidly. All diseased insects should be removed or destroyed. Beauchamp calls it a parasite, and is of vegetable nature, of the order of fermentation, and that remedies of creosote will destroy it, washing the eggs in a solution of creosote. Impregnating vapor through the nursery worms, when hatched in stables of sheepfolds, generally did well in France and Turkey. E. Muller, of Nevada, informs me his best eggs are those exposed all winter on the trees, at an elevation of eighteen hundred feet above the sea. Make these experiments.

The affliction can be modified by the alkalinity of the atmosphere; a treatment analogous to the water and salt of Vichy and thermal springs has proved beneficial. If so, Nevada would be a glorious place for treatment, if not rearing silk. France has raised a commission and sent it to China and Japan to study the great silk interests; so have other countries of Europe, to perfect their knowledge and benefit their experiments. And in this connection, with these growing interests [illegible] before us, might it not be well for our Government to organize such a commission, to be composed of practical and experienced silk [illegible] to visit these different silk growing regions of Europe and Asia for the purpose of studying the silk interest in all its phases. It must result in great benefits, not only to California but the whole country. The following are some of the best deduced facts collected by the best authorities in Europe and Asia: That the silkworm mulberry tree [illegible] to a temperature of seventy-seven degrees Fahrenheit; that [illegible] of the mulberry tree does not pass beyond the limit of grape [illegible] and thrive together—fine grapes, fine silk, and fine fleece [illegible]. The mulberry trees can be raised on mountains, in a mean temperature of forty-nine degrees Fahrenheit. We have seen them dot [illegible]

tains of Syria and Asia to their very summits. Climate habitually stormy is not congenial to the breeding of silkworms, nor those affected by sudden changes of electricity or sudden thunder storms. Places affected with fevers are pernicious to them. The industry is rather an adjunct to a farm than a chief occupation. So, all through Asia and Europe, you see almost every family in the silk region raising or breeding silkworms and selling their product to the merchants. We commend this to the people of California, rather than the large cocooneries, as the most successful in the end for the State. Always choose the cocoons of the largest size for reproduction. Those are most successfully reared and least affected during development. Regularity of form, roundness of extremities, trueness of grain on surface, solidity, thickness of layers or silky envelop. The color ought to be golden yellow, exhibiting no stain or spot of any kind.

The display of silks and the whole *modus operandi* of the business in California is before you, from the eggs: Caterpillars in all their stages feeding, and mulberry trees; the spinning, cocoons, butterflies, reeled silk from your own factories, and beautiful figured and flowered work—all instructive, beautiful and encouraging. In visiting the silk nursery of I. N. Hoag, close by, we saw from fifty to sixty acres in plantations, covered with some three hundred thousand trees, feeding about one million five hundred thousand worms, presenting the exhibition with the complete miniature cocoonery before us. E. Muller, of Nevada, has a fine display, rearing one hundred and five thousand trees of the morus alba, feeding fifty thousand worms. Smith Brothers' cocoons are not to be surpassed by any for size and value. Mrs. Weston's fine display is highly creditable and well displayed, while Neumann, the pioneer silk manufacturer, gives you specimens of his success. His silken fleece is before you, while he promises you a silk flag to float in triumph over your enterprise. Snell, with his Japanese workers, in El Dorado, is here, and reports favorably and hopefully. And other exhibitors, whose names we do not know. From these we have the hope and cheer. We have the State, the climate similar, equal and, in some places, better than Asia. We have the mulberry tree, and can raise to an unlimited amount. The largest portion of California is admirably adapted to the whole culture, especially healthy worms. We are accumulating the experience and knowledge of Europe and Japan—of all the silk growers and countries of the world, from whom we may yet learn much. Thus, with land and climate, increase of experience, new recruits to our population from Europe, China, Japan, and the whole world generally—cheapening labor, with talents the most diverse and elastic—capital seeking employment, and laborers bread, homes and comfort; and with the rich smiles and blessings of Almighty God, we may exclaim "Eureka."

METEOROLOGICAL REPORT.

BY THOMAS M. LOGAN, M. D., METEOROLOGIST TO THE STATE BOARD OF AGRICULTURE.

In continuation of the plan adopted from the commencement of these reports, the Meteorologist to the State Board of Agriculture herewith submits another series of tabulated results of observations made in diverse localities in the State. As every additional year adds to the value of these tables, by bringing the general averages nearer to a constant, so it becomes necessary to recapitulate, in a measure, our former calculations and deductions, in order to make the resulting corrections in the right place. The busiest farmer can thus, at a glance of this compact mode of information, get all the essentials we now possess, and be prepared to study the details of any part or parts he may wish further to examine while concerting his plan of operations with intelligence.

The tabulated series of the results of the thermometer and rain gauge, especially at Sacramento and San Francisco, may be made the basis for estimating these chief items of what constitute climate (except where other special observations have been made), in the great interior valley portion for the former, and the coast valleys for the latter. The mean temperature of each month and year for the whole period observed, together with the extremes of heat and cold in each month and each year in these important localities, can be readily contrasted. To facilitate the comparative estimate of a more extended area, a recapitulation, with the latitude, longitude, altitude and mean annual amount of rain, has been expressly framed, including all the localities whence I have been able to collect the data. These contrasted summaries show how irregularly isothermal localities in the State are distributed, and also how widely the nearest approximated points are thermally distinguished from each other. It is also seen that while there are but few places in which the precipitation of aqueous vapor is approximately the same, there are many in which the difference is remarkably striking. Referring to the tables of mean temperature, it will be seen that San Francisco has no summer, or if it comes at all, it is when the summer months have passed by. September is there the warmest month in the year, and October next. July, the hottest month in Sacramento and elsewhere, is the fourth in the order of heat in San Francisco. From the tables of the extremes of heat and cold, it appears that the coldest weather ever experienced since the American settlement of the State, was in January, eighteen hundred and fifty-four, when the mercury fell to twenty-five degrees in San Francisco, and nineteen degrees in Sacramento. At that time, the mud in the streets of both these cities was all day frozen solid. At Sacramento the slough was frozen over a whole day, so that one could walk over the edges of it. Such remarkably cold weather, however,

is extremely rare, particularly at San Francisco. The extreme of heat experienced at San Francisco, was on the tenth and eleventh of September, eighteen hundred and fifty-two, when the thermometer reached ninety-seven degrees and ninety-eight degrees, on the two days respectively. This, however, was altogether exceptional. In Sacramento the temperature frequently rises as high during the summer months, and on four different dates it reached as high as one hundred degrees, and once, in July, to one hundred and one degrees.

As is well known, the proper adaptation of agricultural operations to the seasons—the periodical rains—contributes more to the success of the farmer in California than any other, I might say every other, circumstance. For this reason the rain tables are particularly worthy of study. They are arranged according to the seasons, commencing with September and ending with August. The climate is thus seen to have seven months in which it always rains, more or less, viz: From November to May, inclusive, with only one single exception; and five in which it seldom rains, and then for the most part very lightly. June, July and August are the driest, as well as the hottest months, except in San Francisco. The heavy rain in July, eighteen hundred and sixty, when over half an inch fell at Sacramento, and the third of an inch on the same day at San Francisco, is a rare exception to the general rule. September and October may be regarded as intermediate between the dry and hot and rainy and cold months. In September, eighteen hundred and fifty-one, one inch of rain fell; and the mean monthly rain for the last twenty years, amounting to .071 inches at Sacramento, shows the tendency in this month to aqueous precipitation. In October, eighteen hundred and fifty-eight, three inches fell, and the mean monthly rain is nearly half an inch. December furnishes more than any other month; January next; then February, March, November, April and May, in the order named. The rain of September, eighteen hundred and fifty-one, and July, eighteen hundred and sixty, present the greatest deviation from the rule. The greatest amount of water that ever fell in any one month was in January, eighteen hundred and sixty-two, and the next greatest in December, eighteen hundred and fifty-two. One half of the supply for the season falls before the last of January, and the other half after that date. There is generally an interim of dry weather between these dates, of four to six weeks' duration. The spring rains are quite as constant as those of the previous period, observing generally the same tendency. If they fall sparingly in the earlier half of the season, they will continue to do so in the latter half. From these results it is evident that, to secure good crops, the seed must be sown at such time, and the ground must be prepared in such manner, as to secure the full benefit of such rains.

This is the view taken and the point insisted upon in the meteorological report published in the transactions of this society in eighteen hundred and sixty-three, and time only strengthens the position. With scarcely an exception in the last twenty years, as shown by our tables, the ground has received a sufficiency of moisture to germinate the seed and bring forward the grain during the earlier rains. At this earlier period the ground is still warm, and the weather is as favorable for the rapid growth of both top and roots of the young grain as in the spring months. With a just regard for these facts, there is no reason why the rains, even when deficient, cannot be made conducive to the interests of the farmer, provided the ground be put, in due season, in a condition most favorable for receiving and retaining moisture. To enforce the

cogency of this reasoning, we have only to turn to our statistics. In the rain table for Sacramento we find that the mean monthly rain for September, October, and November sums up, in the aggregate, to seven hundred and forty thousandths of an inch—an amount few person have any definite idea of, and the extent of which would astonish any agriculturist who should attempt to distribute the same artificially. For every one-hundredth part of an inch, a ton of water falls per acre.

The rainy season commences somewhat earlier in the northern portion of the State, and a much larger proportion of the winter's supply falls by January. The rains, too, are here much more copious. In the south the reverse obtains—the rains of November seldom reaching the latitude of Los Angeles. It will be seen that the regular rainy season, excluding the scattering first and last rains, commences, according to the tables, in November and ends in April. Rain has fallen in every month in the year, but no account is made of a mere sprinkle, nor of fog or mist. Referring now to the tables annexed, which are calculated to demonstrate at a glance intensities, amounts and results, with an infinite saving of time, and, what is far more desirable, with a numerical precision and truth, I beg leave to bring these remarks to a close, not without expressing my obligations to Professor Henry Gibbons, M. D, and the other gentlemen named in the tables, of whose contributions to meteorology I have so freely availed myself.

MEAN TEMPERATURE OF EACH MONTH AT SACRAMENTO, SINCE EIGHTEEN HUNDRED AND FIFTY-TWO, DEDUCED FROM THREE DAILY OBSERVATIONS; ALSO, THE MEAN TEMPERATURE OF EACH YEAR, AND THE MEAN OF SEVENTEEN YEARS.

MONTHS.	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....	Mean...
January	43.00	43.00	43.71	48.02	48.54	45.03	44.87	46.20	47.12	46.41	46.87	49.17	47.42	46.52	48.18	49.50	47.50	46.53
February	50.00	51.00	52.50	52.64	50.25	52.24	50.49	49.83	52.17	47.50	47.96	53.65	49.04	53.48	47.80	51.00	51.29	48.40
March	59.80	53.00	54.82	57.03	56.42	53.74	51.47	53.30	55.05	53.58	57.62	56.07	53.60	54.18	50.67	54.69	57.23	54.83
April	61.00	60.00	58.06	58.80	63.27	59.80	57.11	57.82	60.65	58.05	59.46	62.12	59.35	61.89	60.00	59.16	60.06	59.20
May	68.00	62.00	60.20	63.91	65.51	65.19	63.03	58.48	63.70	61.25	67.14	68.48	70.22	63.06	64.00	64.94	63.00	64.83
June	77.00	67.00	71.10	71.06	71.93	69.43	74.85	65.64	66.18	69.33	69.08	71.10	73.47	72.16	71.62	70.73	69.50	70.65
July	75.00	80.63	72.55	75.12	71.45	70.81	69.07	73.17	73.57	73.19	75.63	74.84	74.01	76.23	75.00	73.68	72.10	73.59
August	71.00	69.47	73.04	69.59	71.31	70.57	67.16	73.50	69.73	75.00	70.66	74.70	71.74	76.03	74.95	71.89	70.09	71.79
September	76.00	65.05	68.01	70.93	67.93	68.90	65.89	67.59	67.78	70.41	68.98	69.83	68.84	72.16	66.30	67.64	66.60	67.57
October	78.00	60.01	63.01	58.04	61.49	59.51	63.28	59.76	59.91	67.60	62.84	64.54	63.07	65.20	60.15	63.09	62.05	63.03
November	53.00	55.05	50.65	52.18	53.24	54.23	54.05	53.47	53.60	53.15	52.74	53.53	56.90	53.84	54.76	53.76	53.66	53.66
December	48.00	47.93	45.29	43.86	47.37	44.47	43.52	49.34	50.93	46.44	46.49	50.18	44.13	50.17	49.90	47.24	43.45	47.02
Mean	62.57	59.51	59.47	60.10	60.73	59.49	58.73	59.01	60.12	60.16	60.35	62.82	60.98	62.08	60.27	60.61	59.71	60.25

EXTREMES OF HEAT IN EACH MONTH AT SACRAMENTO SINCE EIGHTEEN HUNDRED AND FIFTY-TWO; ALSO, IN EACH YEAR.

MONTHS.	1853....	1854....	1855....	1856....	1857....	1858....	1859....	1860....	1861....	1862....	1863....	1864....	1865....	1866....	1867....	1868....	1869....	Mean...
January	66	59	62	60	63	58	58	56	58	60	60	69	60	61	60	62	64	61
February	68	62	70	69	62	66	63	66	62	64	63	71	61	66	61	66	78	65
March	75	68	76	79	69	66	66	65	70	72	76	77	71	69	70	72	79	72
April	76	75	81	70	83	85	78	78	76	76	81	89	83	87	80	76	86	80
May	78	77	90	83	91	81	84	74	77	80	88	96	92	92	87	82	97	81
June	97	90	100	97	101	92	102	86	82	88	94	97	94	97	97	96	99	76
July	93	101	99	100	94	98	92	93	92	93	97	97	94	99	99	97	98	94
August	93	99	98	99	96	90	89	92	90	95	95	95	91	100	90	98	96	90
September	95	90	94	98	86	92	85	89	84	94	90	89	91	94	96	91	86	90
October	88	90	93	78	79	80	87	81	78	86	88	89	87	94	79	85	79	84
November	72	70	69	79	67	69	70	67	68	70	70	71	74	75	70	71	70	70
December	64	68	59	54	58	53	54	60	63	60	60	62	59	68	66	60	56	60
Year	80	79	75	72	79	78	77	75	74	78	80	83	79	83	79	76	82	78

EXTREMES OF COLD IN EACH MONTH AT SACRAMENTO SINCE EIGHTEEN HUNDRED AND FIFTY-TWO; ALSO, IN EACH YEAR

MONTHS.	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....	Mean...
January	33	19	27	30	30	29	30	32	30	29	33	34	32	32	32	34	34	31
February	38	38	32	37	30	32	34	32	45	36	35	37	35	41	32	36	34	35
March	46	37	41	37	40	37	36	34	42	40	40	39	32	40	34	38	44	38
April	50	49	41	43	45	42	36	38	47	42	42	40	57	43	42	43	44	40
May	54	48	44	45	51	46	45	37	50	42	51	47	54	40	48	49	52	47
June	58	49	52	52	54	52	51	48	53	52	52	54	54	50	50	53	56	52
July	62	50	58	55	53	53	51	51	61	54	60	57	57	54	53	55	59	55
August	58	52	60	53	55	55	52	54	58	51	56	60	58	53	52	54	56	54
September	54	48	54	52	52	50	50	50	57	50	53	54	53	52	51	52	50	52
October	58	49	45	37	45	38	43	41	46	47	40	46	50	43	41	41	40	43
November	46	44	34	34	35	34	37	35	39	37	34	37	45	34	36	34	37	37
December	32	29	25	29	32	23	28	33	39	33	32	32	30	33	34	30	29	31
Year	49	43	43	42	43	41	41	40	47	43	42	45	46	43	42	43	44	43

MEAN TEMPERATURE OF EACH MONTH AT SAN FRANCISCO SINCE EIGHTEEN HUNDRED AND FIFTY, DEDUCED FROM TWO DAILY OBSERVATIONS—ONE AT SUNRISE, THE OTHER AT NOON; ALSO, THE MEAN TEMPERATURE OF EACH YEAR.

MONTHS.	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....
January	49.3	50.8	52.0	48.2	51.0	48.8	51.2	46.3	46.5	47.8	47.5	47.6	57.7	52.5	49.4	49.0	51.2	45.9	51.2
February	51.1	53.1	54.1	53.6	56.8	53.7	51.4	53.1	48.8	50.5	51.1	46.7	50.9	55.9	51.0	53.4	52.0	51.9	51.2
March	53.8	52.9	55.9	54.1	59.4	55.9	55.9	52.0	49.0	53.0	53.7	50.2	57.8	55.6	53.3	54.3	50.5	53.5	57.4
April	57.7	55.4	58.3	59.8	57.7	55.9	58.8	55.7	53.6	53.0	57.1	51.3	55.7	57.9	55.5	58.4	57.5	55.3	56.5
May	57.0	55.1	60.7	56.8	57.7	56.2	57.5	57.6	57.2	54.0	57.5	55.5	57.6	58.9	62.0	58.0	58.3	58.0	58.5
June	58.8	60.4	61.9	58.5	59.9	59.1	60.9	58.7	61.5	57.9	57.6	61.2	58.2	58.3	61.2	62.0	60.2	58.0	60.0
July	57.9	61.4	60.3	61.3	61.2	59.4	59.2	60.7	59.3	61.3	58.5	61.7	59.7	57.6	61.1	59.6	63.2	59.6	60.2
August	63.2	61.2	60.0	60.3	62.5	59.6	59.1	61.9	61.1	62.5	58.9	62.0	61.1	60.6	60.0	59.0	60.4	59.8	59.6
September	61.6	63.1	62.7	60.5	62.4	61.5	60.8	62.4	61.4	62.9	60.3	61.3	63.6	60.3	63.3	62.1	61.3	59.3	60.0
October	61.9	58.7	62.7	60.7	61.6	57.6	60.6	57.8	59.7	56.8	56.0	63.3	62.2	59.6	58.7	62.0	58.2	60.8	60.5
November	56.3	53.5	57.0	58.0	52.9	53.3	54.5	54.0	53.5	52.8	54.2	56.2	57.3	56.0	57.6	56.6	56.7	57.2	.....
December	51.3	50.8	52.1	53.8	47.8	47.0	59.5	44.8	46.3	49.2	51.7	49.5	53.7	51.0	47.2	54.7	55.3	53.2	.....
Mean	56.6	56.5	58.1	57.1	57.6	55.7	57.0	55.4	54.8	55.1	55.4	55.5	57.5	57.0	56.7	57.4	57.1	56.1	.....

EXTREMES OF HEAT IN EACH MONTH AT SAN FRANCISCO SINCE EIGHTEEN HUNDRED AND FIFTY; ALSO, IN EACH YEAR.

MONTHS.	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....
January.....	64	64	62	69	72	60	67	62	65	62	60	62	63	70	63	61	61	58	64
February	71	65	67	69	72	70	68	70	65	74	61	58	64	73	65	70	64	68	69
March.....	74	81	77	72	78	80	74	73	70	75	82	72	79	74	71	69	65	70	72
April.....	84	82	75	83	78	69	81	80	80	83	79	75	82	84	75	88	85	75	70
May.....	71	67	81	73	83	69	75	87	85	73	76	76	78	75	87	79	87	86	86
June.....	78	80	87	74	82	74	87	77	85	74	76	79	78	70	87	85	86	72	72
July.....	73	79	78	84	90	78	72	86	82	82	78	86	72	70	79	76	93	75	74
August.....	82	76	76	85	79	80	83	73	80	86	76	87	82	78	75	75	73	75	75
September.....	75	98	88	87	84	85	88	88	87	88	76	84	82	86	91	77	88	70	85
October.....	83	78	85	83	79	79	83	79	89	79	83	84	87	91	80	80	79	85	85
November.....	73	80	73	72	67	74	72	73	71	70	69	70	72	72	76	72	70	75	.....
December.....	61	63	69	71	61	58	60	59	63	61	63	64	69	63	60	64	66	63	.....
Year.....	84	98	88	87	90	85	88	88	89	88	83	87	87	91	91	88	93	86	.....

EXTREMES OF COLD IN EACH MONTH AT SAN FRANCISCO SINCE EIGHTEEN HUNDRED AND FIFTY; ALSO, IN EACH YEAR.

MONTHS.	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....
January.....	30	35	41	25	33	33	32	30	30	31	29	29	40	38	35	38	37	32	35
February.....	33	40	42	38	41	40	31	30	34	32	38	34	38	43	38	42	37	31	36
March.....	34	36	41	38	44	41	41	36	35	37	37	37	44	44	36	42	38	38	44
April.....	42	37	46	45	40	40	44	38	34	39	40	36	43	40	40	45	42	42	43
May.....	45	41	47	43	44	43	43	40	39	39	43	38	44	47	46	43	47	41	47
June.....	49	49	50	47	49	46	50	44	45	45	49	49	50	48	49	49	48	45	48
July.....	47	49	51	46	51	48	50	48	48	46	49	49	50	48	50	49	52	46	52
August.....	50	49	51	50	53	49	50	49	48	50	47	49	51	48	50	50	51	49	48
September.....	50	45	50	46	50	51	50	44	43	47	47	42	53	48	47	50	50	49	48
October.....	47	46	49	46	51	41	45	36	38	40	40	50	42	47	47	49	41	45	45
November.....	41	40	44	47	42	40	31	34	36	39	35	44	43	42	44	44	44	45	.....
December.....	35	36	40	38	29	35	34	27	32	32	35	38	40	38	27	42	39	41	.....
Year.....	56.6	35	40	25	29	33	31	27	30	31	29	29	38	38	27	38	37	31	.....

RAIN TABLE FOR SACRAMENTO.

Arranged according to the seasons, showing the amount in inches of each month during twenty years, and for each rainy season; also, the mean quantity for every month, and the mean annual amount of rain.

MONTHS.	1849.....	1850.....	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	Mean.
September	0.250	0.000	1.000	0.003	1.000	sp'kle	sp'kle	sp'kle	0.000	sp'kle	0.025	0.063	0.000	0.000	0.003	0.004	0.080	0.000	0.006	0.000	0.071
October	1.500	0.000	0.180	0.000	0.005	1.010	0.000	0.195	0.655	3.010	0.000	0.914	sp'kle	0.355	0.000	0.120	0.480	0.001	0.000	0.000	0.421
November	2.250	sp'kle	2.140	6.000	1.500	0.650	0.750	0.651	2.406	0.147	6.485	0.181	2.170	0.005	1.490	6.718	2.427	2.426	3.806	0.774	2.248
December	12.500	sp'kle	7.070	13.410	1.540	1.150	2.000	2.396	6.632	4.329	1.834	4.282	8.637	2.327	1.815	7.867	0.364	9.511	12.850	2.612	5.156
	1850.....	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....	
January	4.500	0 650	0.580	3.000	3.250	2.670	4.919	1.375	2.444	0.964	2.310	2.668	15.036	1.733	1.077	4.776	7.699	3.440	6.036	4.790	3.694
February	0.500	0.350	0.120	2.000	8.500	3.460	0.692	4.801	2.461	3.906	0.931	2.920	4.260	2.751	0.186	0 712	2.010	7.104	3.147	3.630	2.722
March	10.000	1.880	6.400	7.000	3.250	4.200	1.403	0.675	2.878	1.637	5.110	3.320	2 800	2.360	1.303	0.481	2 018	1.010	4.348	2.942	3.265
April	4.250	1.140	0.190	3.500	1.500	4.320	2.132	sp'kle	1.214	0.981	2.874	0.475	0.821	1.693	1.080	1.370	0.476	1.805	2.306	1.240	1.568
May	0.250	0.690	0.300	1.450	0.210	1.150	1.841	sp'kle	0.203	1.037	2 491	0.590	1.808	0.355	0.742	0.460	2.252	0.008	0.270	0.648	0.787
June	0.000	0 000	0.000	0.001	0.310	0.610	0.033	0.350	0.098	0.000	0.017	0.135	0.011	0.000	0.087	0.000	0.100	0.000	sp'kle	0.008	0.058
July	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.030	0.549	0.000	0.000	0.000	0.000	0.004	0.018	0.000	0.000	0.000	0.029
August	0.000	0 000	0.000	0.000	sp'kle	0.000	0.000	sp'kle	sp'kle	0.000	0.000	0.000	0.006	0.000	0.085	0.000	0.000	0.000	0.000	0.000	0.004
Total	36.000	4.710	17.980	36.362	20.068	18.620	13.770	10.443	18.991	16.051	22.626	15.548	35.549	11.579	7.868	22.512	17.924	25.305	32 769	16.644	20.068

Maximum quantity of rain in each month, minimum quantity in each month, and average quantity in each month, at Sacramento, since 1849.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Maximum	15.0	7.1	10.0	4.3	2.2	0.3	0.5	0.0	1.0	3.0	6.7	13.4
Minimum	0.9	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean	3.7	2.7	3.2	1.5	0.7	0.0	0.0	0.0	0.0	0.4	2.2	5.1

RAIN TABLE FOR SAN FRANCISCO.

Showing the amount of rain in each month since 1850; *and the total amount in each rainy season.*

MONTHS.	1850..	1851..	1852..	1853..	1854..	1855..	1856..	1857..	1858..	1859..	1860..	1861..	1862..	1863..	1864..	1865..	1866..	1867..	1868..	1869..
September.	.....	1.0	.0	.....	.....	.....	.1	.....	.....	.....	.1	.....	.....	.2	.1	.2	.....	.1	.....	.2
October.....	.....	.2	.8	.1	2.1	.....	.5	.9	3.4	.....	.9	.....	.....	.....	.1	.1	.....	.6	.2	1.3
November..	1.3	2.2	5.3	1.4	.4	1.2	2.9	3.0	.5	5.4	.2	3.8	.1	2.5	7.6	3.1	2.7	3.1	1.2	.....
December..	1.1	7.1	11.9	2.1	.4	5.4	4.0	4.2	4.8	1.5	4.8	6.1	2.7	1.7	6.9	.6	13.1	12.1	4.3	.....
	1851..	1852..	1853..	1854..	1855..	1856..	1857..	1858..	1859..	1860..	1861..	1862..	1863..	1864..	1865..	1866..	1867..	1868..	1869..	
January....	.6	.6	4.1	4.3	4.5	8.4	2.1	4.4	1.0	1.1	1.2	18.1	3.3	1.3	3.9	11.0	6.6	9.6	6.4	.....
February...	.4	.1	1.2	8.4	4.6	.5	8.6	1.3	5.2	1.4	2.8	6.1	3.3	.0	.8	1.5	6.2	6.2	4.0	.....
March	1.9	6.4	4.8	3.2	4.3	1.6	1.6	3.9	2.5	3.1	3.4	1.7	2.4	1.4	.6	2.6	6.2	6.4	3.2	.....
April.....	1.1	.2	5.1	3.3	5.6	3.2	.....	1.1	.3	1.7	.3	1.1	2.9	.9	.7	.1	1.1	2.2	2.2	.....
May.....	.7	.3	.3	.1	2.2	.9	.1	.1	2.0	2.6	.7	.9	.4	.5	.4	1.8	.1	.....	.1	.....
June.....	.....	.....	.....	.1	.....	.....	.1	.1	.....	.....	.2	.2	.....	.....	.....	.2	.....	.2	.....	.....
July.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August.....	.....	.1	.0	.....	.....	.....	.....	.....	.1	.....	.....	.....	.1	.....	.2	.....	.....	.....	.....	.....
Total..	7.1	18.2	33.5	23.0	24.1	21.2	20.0	19.0	19.8	17.1	14.6	38.0	15.2	8.5	21.3	21.2	32.2	40.5	21.6	.....

Maximum quantity of rain in each month, minimum quantity in each month, and average quantity in each month, at San Francisco, since 1850.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Maximum.....	18.1	8.6	6.4	5.6	2.6	0.2	0.3	0.2	1.0	3.4	7.6	13.1
Minimum.....	0.6	.....	0.6	.....	0.1	.....	.....	.....	.....	.....	0.1	0.4
Mean.....	4.8	3.2	3.0	1.5	.50	.04	.01	.01	.05	.37	2.4	4.9

Date of the first and last rains, and of the beginning and ending of each rainy season; also, the amount of rain which fell before the end of the year, and the amount after the end of the year, in each season.

Sacramento.	First rain.	Last rain.	Rainy season. Begins.	Rainy season. Ends.	Before January.	After December.
1849–50	September 23	May 25	November 5..	April 30	16.5	19.5
1850–51	November 10	May 20	December 5...	May 1	0.1	4.6
1851–52	September 6..	May 17	December 19.	March 31	10.3	7.5
1852–53	October 28 ...	May 29	November 9..	April 29	19.4	16.9
1853–54	September 15	June 26	November 15	April 30	3.0	17.0
1854–55	September 22	August 21	December 3...	May 20	2.8	15.8
1855–56	September 15	May 22	November 9..	May 22	2.7	11.0
1856–57	September 20	June 30	November 15	March 31	3.2	7.2
1857–58	October 6	June 18	November 2..	March 7	9.6	9.3
1858–59	October 20	May 23	December 10.	April 24	7.5	8.5
1859–60	September 15	July 17	November 3..	May 25	8.3	14.3
1860–61	September 24	June 12	December 7...	March 29	5.4	10.1
1861–62	October 29	August 18	November 11	May 18	10.8	24.7
1862–63	October 4	May 19	November 9..	April 26	2.6	8.9
1863–64	September 19	August 24	November 10	May 17	3.3	4.5
1864–65	October 24	May 19	November 23	March 4	14.7	7.8
1865–66	September 15	July 24	November 12	May 28	3.3	14.6
1866–67	September 17	May 16	November 3..	April 12	11.9	13.4
1867–68	September 14	June 23	November 19	April 13	16.6	16.1
1868–69	November 18	July 26	December 17.	April 20	3.4	13.2
Mean			November 17	April 27	7.8	12.2
San Francisco.						
1850–51	November 10	May 20	December 5...	May 1	2.4	6.7
1851–52	September 6..	May 17	December 19.	March 31	10.5	7.7
1852–53	October 28	May 12	November 9..	April 29	18.0	15.5
1853–54	September 15	April 28	January 12...	April 28	3.6	19.4
1854–55	October 4	May 20	December 31.	April 17	2.9	21.2
1855–56	November 10	May 25	November 10	April 14	6.6	14.6
1856–57	September 10	March 31	November 15	March 31	7.5	12.5
1857–58	October 6	May 21	November 24	April 7	8.1	10.9
1858–59	October 21	May 22	December 4...	April 10	8.8	11.0
1859–60	November 9..	May 25	November 9..	April 8	6.9	10.2
1860–61	October 4	May 22	December 6...	April 5	6.0	8.6
1861–62	November 1..	May 12	November 10	April 14	9.9	28.1
1862–63	November 5..	May 19	December 18.	April 26	2.9	12.3
1863–64	September 19	May 17	November 11	April 4	4.4	4.1
1864–65	November 15	May 19	November 23	March 4	14.9	6.4
1865–66	September 24	June 8	November 13	March 31	4.0	17.2
1866–67	November 3..	May 17	November 16	April 12	15.8	16.4
1867–68	September 14	June 23	November 19	April 13	15.9	24.6
1868–69	October 1	May 19	December 17.	March 29	5.7	15.9
Mean			November 28	April 10	7.6	13.4
Red Dog.						
1861–62	October 29	June 12	November 11	May 11	37.5	72.0
1862–63	October 4	May 19	December 20.	April 15	5.5	37.2
1863–64	September 19	May 1	November 10	April 17	10.2	17.9
1864–65	October 24	May 19	November 15	March 4	38.9	22.3
Mean			November 21	April 11	23.0	60.3
Vacaville.						
1868–69	November 18	July 26	December 17.	April 19	3.4	14.6
Shingle Sp'gs.						
1866–67	November 4..	May 25	November 4..	April 27	23.5	26.8

COMPARATIVE TABLE OF METEOROLOGICAL STATIONS IN THE PACIFIC STATES.

STATIONS.	Altitude above the sea, in feet	Latitude	Longitude	Length of period observed	TEMPERATURE. Hottest mean day	Coldest mean day	Range	Mean	Rain and snow, in inches.	AUTHORITY AND REMARKS.
		° ′	° ′		°	°	°	° ′		
Fort Yuma	120	32.43	114.36	6 years.	92	56	36	74.00	3.24	Army Met. Reg., 5 years, partially.
San Diego	150	32.42	117.14	7 "	74	52	22	62.00	10.43	Army Met. Reg., 3 years, partially.
Monterey	140	36.36	121.52	6 "	59	50	09	55.00	12.20	Army Met. Reg., 4 years, partially.
Fort Miller	402	37.00	119.40	5 "	90	47	43	66.00	24.51	Army Met. Reg., 4 years, partially.
San Francisco	22	37.48	122.27	9 "	78	39	39	55.90	22.09	Williamson, and W. O. Ayres, M. D.
San Francisco	22	37.48	122.27	19 "	78	37	41	56.40	21.50	Henry Gibbons, M. D.
Benicia	183	38.08	120.14	8 "	80	44	36	59.12	22.86	W. W. Hays, Surgeon, U. S. Army.
Stockton	35	37.37	121.14	4 "	72	56	16	62.00	15.10	R. K. Reid, Physician to Asylum.
Sacramento	54	38.31	121.29	20 "	94	32	62	60.25	20.06	Thos. M. Logan, M. D.
Marysville	76	39.12	121.42	1 "	90	38	52	63.32	.....	W. C. Belcher, 1858.
Fort Reading	674	40.31	122.05	4 "	83	44	39	62.09	29.02	Army Met. Reg., 2 years, partially.
Aurora	7,468	38.19	119.00	1 "	82	20	62	52.00	.....	Major Williamson, U. S. Army.
Hope Valley	7,088	38.47	119.51	4 mos.	61	11	40	40.00	.....	Major Williamson, U. S. Army.
Strawberry Valley	5,710	38.49	120.07	3 "	69	24	35	51.00	.....	Major Williamson, U. S. Army.
Fort Jones	2,570	41.36	122.52	3 years.	71	31	40	51.40	16.77	Army Met. Reg., 2 years, partially.
Astoria	50	46.11	123.48	18 mos.	62	39	23	50.20	86.35	Blodget and Williamson.
Fort Orford	50	42.44	124.29	4 years.	61	46	15	53.62	71.63	Army Meteorological Reg., partially.
Red Dog (Nevada)	2,900	39.18	120.47	4 "	.....	.....	.....	.....	83.30	W. A. Begoli, 1861, 1862, 1863, 1864.
Nevada	2,630	39.18	120.52	1 "	72	45	27	55.75	.....	J. McCoy, County Assessor.
Shingle Springs (El Dorado)	1,450	.....	.....	1 "	.....	.....	.....	.....	50.30	John Edwards, M. D.
Vacaville (Solano)	.....	38.20	122.00	1 "	86	37	49	53.25	24.18	Professor J. C. Simmons.

SILK CULTURE IN CALIFORNIA.

BY I. N. HOAG, OF YOLO.

During this last spring a number of parties engaged in silk culture in this vicinity, and myself among them, having lost our first feeding of worms, and this fact having found its way into some of the newspapers, accompanied with a hint that the industry was of such great importance to the State that the people would be glad to know the cause of the losses; whether they were of such a character as to prove detrimental to the business generally, or whether they were only local and temporary, and easily avoided. In a communication I stated that, so far as my loss was concerned, I was satisfied that the cause was local and temporary and easily remedied in the future. I said also, that I would, at a proper time, give the public a full statement of those causes and my experience in the business. My experience and experiments during the summer have fully convinced me that my position was then correct, not only as regarded my own loss, but that it is also true of all the other losses that have taken place this season throughout the State—that is, that they were local and temporary, and that they will prove a benefit rather than an injury to the business. I propose now to redeem my promise then made, and in accordance with the solicitation of many sincere friends of our State's prosperity, I will give a review of this promising industry in our State up to the present time.

One year ago the cultivation of silk in California was looked upon with great favor by all classes of the community. All hoped and believed it would at no very distant day assume an importance among the profitable industries of the State, equal, if not superior, to that of any other agricultural industry. So general was this belief and hope that perhaps no other business was the topic of so much thought and discussion among agriculturists, and indeed, among business men of all classes, as silk culture. Many of our most successful merchants and capitalists were turning their attention in this direction and contemplating the engagement, as soon as practical, in the pleasing and profitable business of cultivating mulberry plantations and the production of eggs and silk.

The press—that true indicator of public opinion and friend of general improvement—was unanimous in putting down this industry as one promising great inducements to individual enterprise and capital, and certain to contribute largely to public prosperity. Indeed, the indications were that California would, in a very few years, rival France and Italy in the production of rich and beautiful silk fabrics, and relieve China and Japan of that most profitable trade with Europe—the trade in silkworm eggs, worth to those countries, annually, from six to ten millions of dollars.

Such was the prospect of our silk industry but one year ago, and how-

ever flattering, it was a prospect warranted and supported by reason and facts. Among these facts may be mentioned the decline of the production of silk in European countries, in consequence of a disease among the worms, rendering their product less in quantity and inferior in quality, and the reproduction of the worms from year to year, from their own eggs, impossible; a destructive malady, in the form of a parasite, among the silkworm chrysalis in Japan, seriously threatened to cut off the supply of eggs to Europe from that country; the increasing demand for silk as a wearing apparel, the world over, and the consequent increase in the price of the same; the unparalleled success which for ten successive years had attended the experiments of Louis Prevost in the production of mulberry trees and silk cocoons in this State—to which had been added the uniform success of many other parties, during the last three or four years, in different parts of the State—the writer having cleared over a thousand dollars an acre in the year eighteen hundred and sixty-eight, from feeding worms the leaves grown on two-year-old trees, on four acres of land; the growing demand for California eggs in all parts of Europe where they had been tried; the encouragement held out by our State to all parties engaging in the business—two successive Legislatures having offered liberal bounties for the production of mulberry trees and silk cocoons.

The foregoing facts and reasons combined had operated to place California in a most favorable position, as respects the silk industry, at the beginning of the present year. Since that time apparent discouraging causes have been at work, which, to the general public, seem to have cast a shadow over the prospects of the industry, but which, with one exception, will in reality prove beneficial; and aside from that exception, our State has to-day a brighter prospect for the development and profitable prosecution of this industry than at any previous period of its history.

THE YEAR EIGHTEEN HUNDRED AND SIXTY-NINE NATURALLY AN UNFAVORABLE SEASON.

Although, as stated above, the losses of silkworms in this State this year may be traced, in nearly every instance, to local and artificial causes, yet it would be unreasonable to suppose that even in this most favorable climate all seasons are equally favorable. Experience will undoubtedly teach us that even here we have some seasons much more favorable than others for the growth of the mulberry tree, as well as for the health and perfection of the work of the worm. This is the case with reference to all other productive industries, and why should silk culture form an exception? Although our climate is among the best in the world for this business, yet I do not believe it absolutely perfect. I believe that the season of eighteen hundred and sixty-nine has been an exceptional one; that it has been, in fact, the most unfavorable season for the success of the silk business that we have had for eight or ten years past, or may have for the same period to come. This being the case, we should endeavor to note carefully its peculiarities, and learn from it all the lessons we can for our guidance in the future. Few persons have realized the intimate relations existing between the animate and inanimate worlds. A moment's reflection will teach us how close is that connection, and more especially when we refer to those insects which, while in a larvæ state, subsist on the secretions of flowers or leaves of vegetables and trees, as, for instance, the honey bee, the dif-

ferent varieties of butterflies and moths, or those of the silkworm. So intimate is this relation that whatever affects the former, either favorably or unfavorably, will be followed by a corresponding effect on the latter. Whenever we find a uniform and healthy condition and growth of the former, we may look for a corresponding healthy and prosperous condition of the latter, and so the contrary.

With this view of the case, let us refer to the peculiarities of the early part of the past spring and summer. While the rains of the past winter were so distributed as to render that season an open and rather pleasant one, the spring was late, cold and unfavorable to regulate growth. Though we had more than our usual number of late spring showers, yet they were nearly all accompanied with an unusual state of the electric fluid in the atmosphere, as evidenced by the uncommon frequency and severity of the thunder and lightning. These showers were also, until late in June, almost uniformly followed by cold and disagreeable weather. As a natural consequence, all the vegetation was backward and the growth indifferent—the flowers secreting very little honey, and the leaves filled with watery and insipid fluids. It was observed by our silk culturists that the leaves of the mulberry were thinner than usual, containing apparently less glutin and more acid than common. This observation was confirmed by the fact that when the leaves were picked and cut for the young worms, they would very soon commence fermentation and turn black, a condition positively destructive to the health and life of the insect. Though the writer had been feeding worms for the past three preceding seasons, he had never before noticed this tendency to fermentation and treating of the mulberry leaves. It may not be improper here to remark, by way of comparison, that the general absence of this watery and acid condition of the mulberry leaves in California, and the presence of those conditions in most other countries having a more humid atmosphere, is one of the strong points in favor of our State as a silk producing country. The peculiar weather of the past spring had a deleterious effect upon other growing crops. It was noticed by our hop growers that their hop fields presented an irregularity of growth among the hills never before observed in this country; that while the vines were at the tops of some of the poles, those of adjoining hills had not made their appearance above the ground. This was the case in fields on which for years before the hops had made a uniform growth and produced heavy crops. The foliage of the peach tree is peculiarly subject to atmospheric influences, and these influences have a very striking effect on the growth and flavor of this usually delicious fruit. Accordingly, the leaves of the peach were unusually affected the past spring with the curl, and the fruit made an indifferent and unusually irregular growth, and generally lacked that high degree of flavor common to that variety of fruit in our State. These conditions are sure indications of too much acidity in the secretions collected from the atmosphere, and their uniform effect is to retard or prevent the maturing or ripening process both in leaves and fruit.

The peculiarity and exceptional character of the seasons is most strikingly illustrated in the effect it has had upon the prosperity of the honey bees throughout the State. Those who have been in the habit of indulging in the luxury of a plentiful supply of good honey on their tables can probably recognize this fact in their inability to enjoy that luxury this season. I have the statement from J. S. Harbison, the

well known apiarist, who has bees in many portions of the State, that from the first of May to the last of July—the time when bees, in the ordinary seasons, increase most rapidly and add the greatest amount of good honey to their stores—his bees in all his apiaries actually depopulated at least one-third in numbers, and did not gather more than half the usual amount of honey, and that of an inferior quality. Upon inquiry, I find that the experience of bee keepers throughout the State this season has been similar to that of Harbison.

The foregoing facts, it would seem, were sufficient to prove our position, viz: the exceptional character of the past season, and the deleterious influence of the same upon the lives and prosperity of that class of insects under consideration.

We have one other fact, however, to mention, and one that will be recognized by all lovers of nature, upon a moment's reflection. We refer to the unusual scarcity of butterflies during the last spring and early summer. It is usual for these insects, at certain periods in each season in this State, to fill the air and to swarm about the flower gardens and places where water flows over the ground from pumps or springs. Their almost total absence the past season was very remarkable, and when it is remembered that the larvæ of these insects live upon the leaves of different varieties of vegetables, shrubs and trees, and undergo transformations and changes similar to those through which the silkworm passes, the significance of the fact will be seen by all, and its bearing upon the subject of the silk industry will be readily appreciated.

The above facts are suggestive and present questions for the consideration of naturalists and entomologists. Why did the bees depopulate? Were the secretions of the flowers too scanty to prevent starvation, or did those secretions contain vicious or poisonous ingredients? To what is to be attributed this peculiar effect of the atmosphere on growing vegetation, its humidity, or its electrical condition? In what manner does explosive electricity injuriously affect insect life—directly, by the concussion of air, or indirectly, by poisoning or changing the juices of the plants upon which those insects feed?

I have mentioned the foregoing facts for the purpose of calling the attention of silk culturists to them, thus early in the history of this important industry; but I am well convinced that had there been no artificial causes for the loss of worms, the silk business, with proper precautions, could have been made as great a success this season as heretofore, which I will endeavor to show hereafter.

ARTIFICIAL CAUSES.

Before commencing this branch of my subject, it is proper to remark that while it will be shown that artificial causes led to the loss of silkworms in nearly every instance in which such loss occurred the past spring, yet it is believed, and will be assented to by all, that the peculiar unfavorableness of the weather, referred to above, assisted and aggravated those causes, and rendered them much more destructive than they would have been with ordinary good weather.

One of the first requisites to success in feeding silkworms in any climate or country is, that the eggs to be used must be the product of healthy worms or moths. No people understand this better than the European silk culturists, who pay from six to ten millions of dollars

annually for eggs imported from China and Japan, simply to secure this one requisite.

That the eggs used in feeding worms in California the past season possessed this necessary quality, can scarcely be doubted, from the fact that they were raised in this State, and no trace or symptom of disease has ever been discovered in our California worms, though thoroughly examined and tested by the best of experts from France, Italy and Germany.

The next requisite to success is, that the eggs, being healthy when produced, must be preserved in a like healthy condition until the time for hatching. It must be remembered that the eggs of the silkworm will hatch without artificial heat, and that those of the annual variety, of which I am now speaking, will not hatch, even with a degree of heat sufficient to cook them, until they have passed through a natural or artificial winter, or been exposed for a length of time to a low degree of temperature, and after this are subjected to a higher degree—changes similar to those from autumn to winter, and from winter to spring. All authorities agree that the best mode of thus preserving them is to keep them in a dry, cool place. If allowed to remain damp too long they will mildew, and be destroyed. The shell of the egg loses those gummy protective qualities with which it is supplied by nature, and the fluids thus exposed disorganize and part with the vital principle. They become dead and stale, like hen's eggs treated in a similar manner. So long as the fluids of the egg remain uninfluenced by a return of warm weather, or too great a degree of heat, so as to induce the formation of the worm in embryo, the degree of cold to which they are exposed does not seem to affect them. While they remain in their original condition, as when laid, even freezing does not hurt them. Hence, eggs deposited on the body of a tree, or on any other object, and exposed to all the changes of a severe winter in a temperate climate like that of the Atlantic States, or of the higher altitudes in our State, are frequently preserved well, and, upon the return of spring, hatch and produce strong and healthy worms. This experiment has been successfully made by Miller & Isourd, of Nevada City. However, reason would teach us that after the worm has commenced to form in the egg, then an exposure to too low a degree of temperature would either check the growth and injure the strength and vitality of the embryo worm, or absolutely kill it, according to the condition of that embryo and the degree of cold to which it was exposed. This is found to be the fact in practice, as many of our silk growers can testify by a costly experience. The same rule holds good when applied to the eggs of any other insect, or to the eggs of birds.

A careful observer of the weather in the spring of the year can foretell with almost a certainty whether the insect tribes will be numerous or scarce in the approaching season. A uniformity of weather in the spring is generally followed by a multitude of insects of all varieties, while, if a warm spell is followed by a cold snap, the insects are generally scarce for that season; the germs of the insect world having been started by the warm weather, are destroyed by the return of the cold. So, for instance, if a hen's egg be sat upon by the hen until the embryo chicken shows vitality, and is then allowed to become too cold and remain so too long, life is either destroyed or the strength and vitality of the future chicken is impaired, according to circumstances.

In the light of these recognized principles governing the germination and growth of insects, let us examine into the treatment to which most of the silkworm eggs in this State were exposed last winter and spring. Proba-

ably the largest proportion of these eggs were purchased of myself, and while I am now conscious that many of them were not good when delivered, I was then ignorant of that fact. It was always understood, however, that the buyer took his risks, with this condition: that the eggs sold were to be, or had been, treated in the same manner as those retained for my own use. My eggs were all kept in my cellar, which, being very dry and cool, I considered a very good place for them. Here they remained in apparent good condition until about the tenth of March, when, after some very warm days, I observed some of the Japanese trivoltines had commenced to hatch. This variety will hatch at a considerable lower temperature than the French annuals, and I hoped that the latter had not been effected. To avoid such a contingeney, however, I immediately took all my eggs up to Truckee and placed them securely under a house, in a small cellar, where I supposed they could remain without injury from heat until such times in the spring and summer as they would all be wanted for use. I told all my friends who had eggs what I had done with mine, and the result was that nearly all the eggs in this part of the State were very soon packed away under a large house at the Summit, exposed to the most severe freezing weather, and this after many of them had shown visible signs of hatching.

Nearly all the mulberry trees in the State were transplanted the last spring, and those that were not were cut back to the ground, to supply the demand for cuttings, and the season being very backward, it was unusually late before there was sufficient foliage to commence feeding.

On the thirty-first of May I went to Truckee for some of my eggs, for my own use and to fill orders, and was surprised to find the Japanese, both annuals and trivoltines, nearly all hatched, and some of the French annuals hatching on nearly every package. I brought down all the Japanese and as many of the French as I needed at the time, and transferred the balance to the cellar of the Summit House, leaving at the latter place a thermometer, so that I might learn whether it would do to risk them there. The thermometer, on the following day, indicated sixty-two degrees of heat. I had all my eggs sent down immediately, and placed them all, with the exception of three ounces delivered to T. B. Flint, of Sacramento, and one ounce to H. G. Ballou, of Yolo, in a large refrigerator, or ice chest, in my cellar, which was constantly supplied with plenty of ice to keep it cool, being determined not to let the cocoons hatch until they were wanted. The eggs delivered to Flint and Ballou were not placed in the ice chest at all, but were at once allowed to hatch. Both lots were fed in buildings so open that a candle could scarcely be kept burning on a windy evening in either of them. Flint used no artificial heat whatever, and Ballou but very little. Flint's feeding was a perfect success. There was no loss of worms, and the cocoons were of excellent quality. Ballou was not quite so successful, though he did very well. The want of perfect success in his case is attributable to a change of food at nearly the last stage of the worms—which I shall notice hereafter—rather than to the condition of the eggs or the artificial heat. I will also state here that James Hayworth, of Yolo, at about this time, commenced feeding the worms from three ounces of eggs, of the same lot as my French, but which had been kept in his cellar all the spring, packed in charcoal. His building was also very open, and he used no fire, although, as he says, some nights the worms would almost stiffen with the cold. His success was also good.

Now, as to the eggs hatched by myself and those afterward delivered to other parties: They all remained in the ice chest from a week to two

months, being taken out as wanted for use. Now, mark the result: Though they were all hatched by myself and others, and fed with the greatest of care, *not one produced a cocoon!*

Does any one doubt what killed the worms? If so, let him read the statements of experiments and facts that follow, and he will be convinced.

MY EXPERIENCE AND EXPERIMENTS IN EIGHTEEN HUNDRED AND SIXTY-NINE.

Being encouraged by my success in feeding worms in eighteen hundred and sixty-eight, and by the very liberal inducements held out by laws enacted by the two preceding Legislatures, I determined this year to spare no pains and to neglect no precaution considered necessary to secure success, on a scale that would be beneficial to myself as well as advantageous to the State at large. Having extended my mulberry plantations, to secure the necessary food, I next turned my attention to the preparation of necessary buildings for cocooneries, and to supplying them with all the conveniences and apparatus deemed requisite for the prosecution of the business on the most approved style. The building in which I fed last year, though it answered every purpose then, was now pronounced unfit for use, it being too open and not being provided with the necessary apparatus for regulating the temperature. It was therefore battened and improved until it was as tight as many houses, supplied with all the conveniences for ventilation, and with two good stoves to supply artificial heat. A new building having been erected, with direct reference to the business, and in accordance with the rules laid down by the best authors, and being supplied with a hot air furnace and registers for a perfect control of the temperature, I considered myself ready to commence business. My eggs were then taken from the ice chest and put to hatching. Some thirty ounces in each building were hatched and carefully fed by the same Chinaman who had brought me such success the year before. The night-watch and fireman were instructed not to allow the temperature to fall below seventy degrees, and not to exceed about seventy-five degrees, except when raised by the natural heat of the sun. The worms grew very rapidly, much more so than those fed in the open buildings of which I spoke in my last, and without artificial heat. My Chinaman felt very much elated with the prospect, and I thought success almost secured. They passed through the first moulting in apparent good order, but between the first and second moultings a growing irregularity in size began to be observable, and there was evident delay in passing through the second moulting. As they approached the third change, the irregularity in size grew greater, and the smaller worms began to assume an unnatural, bluish color about the head, and to taper too much from the head to the tail.

When about fifteen days old, instead of going into the third moulting, as they should have done, and becoming quiet, they seemed restless and uneasy, as if in distress. They ate but little; but by their constant motion they ran over their food, trampling it down, and rendering it in a condition favorable for fermentation. The larger worms passed through the third moulting, but the smaller and blue-headed ones mostly died at this stage. As they approached the time for the fourth moulting the trouble increased, greater irregularity in size and more unnaturally blue-heads appeared every day. Despairing of success, I threw them all out. At this stage of the proceeding I was completely in the dark as to the cause of the trouble; I could not even conjecture, with any degree of

satisfaction to myself, what was the matter. The weather I knew was unusually bad; some rain showers, many windy days and cold, damp nights, with uncommonly frequent thunder and lightning for the time of year, were among the phenomena of the weather. The leaves, too, seemed to be filled with too much acidity.

All these things were unfavorable, but they could not be fixed upon as the real cause of the trouble, for the reason that the worms being fed by my neighbors, Flint, Ballou and Hayworth, were all subject to the same natural influences, and yet they were all doing well, though their growth was comparatively slow. I concluded, therefore, as the result of my first feeding, that the trouble must be either in the eggs or in the artificial heat, and I inclined to the latter as the cause. Yet I could not settle upon this idea, for the reason that some Japanese worms, hatched from eggs that had never been in the ice box, were fed in one of my cocooneries at the same time, and treated in every respect like the French, passed through all the changes successfully and made most excellent cocoons in twenty-six days from the time of hatching. In this state of uncertainty I determined to try again, and in this trial to determine, if possible, the exact cause of the loss. From the Japanese cocoons just made I obtained a supply of good eggs. I put about three ounces of these, three days after they had been laid, into my ice chest, determined to know what effect it would have on them. At three days old the worms had begun to form in these Japanese eggs. At the same time I allowed some of these Japanese eggs to hatch, and with more French eggs, taken from the ice chest, I again filled both of my cocooneries. In one I used no artificial heat, in the other I used enough to keep the temperature about the same as before.

The result was another failure with all the worms hatched from eggs that had been in the ice chest, and another good success with those that had not. Having allowed my three ounces of Japanese eggs to remain in the ice box two weeks, during which time not one of them had hatched, I took them out, and at the end of five or six days they hatched finely. I had them carefully fed, and watched with a great deal of anxiety the result, for though I had become pretty well satisfied that I had solved the problem, yet I depended on this last experiment for positive proof, and that proof I obtained. Instead of going through all the different stages in good order and making fine cocoons, as did those allowed to hatch in their proper time, these worms began to show that same irregularity in size at the age of ten days, and in from ten to fifteen days the blue heads made their appearance, and although some of them went through all the changes and made cocoons, a great deal the larger part of them died in precisely the same manner as the French from the ice chest had done. I will here state that in the experiment in which I used artificial heat in one cocoonery, and in the other none, the worms in the latter building lived much longer and seemed better at the same age, all the way through, than those in the former, though they did so poorly after the fourth moulting, that I concluded that it would not pay to feed any longer. I will also state that both Flint and Ballou, believing that my trouble was attributable to artificial heat, and not to the eggs, each took another lot of my eggs after they had been kept in the ice chest from four to six weeks, and hatched and fed them. Instead of meeting with success, as before, the result in both cases was the same as mine invariably had been with chilled eggs. A number of other parties to whom I delivered eggs from the ice chest, met with the same bad fortune, and not one who fed worms from these eggs was successful, while

those who used them before they were thus chilled, generally, if not universally, had good success. Having conducted my own experiments to a satisfactory solution of the question, I made a tour among other cocooneries in this section, and in every instance where ill success was attending the feedings, I discovered the same unmistakable signs of chilled eggs.

Having learned that all those engaged in the business in Los Angeles had, early in the spring, clubbed together to build a large ice box, in which to keep their eggs back until such time as their trees, all of which had been cut down to the ground to supply the demand for cuttings, should supply sufficient foliage to commence feeding, I suspected that they also might have met with the same misfortunes that had attended the efforts of many in this section. Upon opening a correspondence on the subject, I soon found my suspicions fully confirmed. There seems now to be but one opinion among the silk culturists in that part of the State as to the cause of their failure, and that opinion is, that it was owing to their unfortunate experiment with the ice box. I have related my experience this summer to many persons who have long been engaged in feeding worms in European countries, and they uniformly agree that the ice box is the cause of the trouble. My Chinamen, some of whom have been brought up from childhood in the business, came to the same conclusions. I think now there cannot be the least doubt as to the correctness of this opinion. It would seem, in fact, that we all ought to have known better than to have been led into so fatal an error. The fact that nearly all the trees in the State had been cut down to the ground, and the lateness of the season forced us to adopt some method to keep our eggs from hatching until we should have leaves to feed them, and, unfortunately, we neglected the precaution until our eggs were so far advanced that a resort to any means to keep them back a sufficient length of time would probably have ruined them as effectually as the one adopted.

The lesson taught by the experience of this season is like many others we learn by accident, and which, when learned, appears so plain and easy that we wonder we were so ignorant or careless as not to have known it before.

I will here state that those who were so fortunate as to be able to obtain eggs of the Japanese variety, that had been produced in the forepart of the season for feeding in the latter, were, with few exceptions, very successful. The cause of the failure in the exceptional cases is one that serves to illustrate the superiority of our State for silk culture over those countries where showers of rain are of frequent occurrence during the season for feeding. It is irrigation. I have two or three cases directly in point, to show that it will not be safe, while feeding worms, either to irrigate the trees or to change the food in any manner to leaves containing more water than those they have been eating. Dr. C. Ruddick, of Yolo County, was feeding some worms, and fearing that his food would fall short, resorted to the irrigation of some of his trees to force a greater growth. No sooner did the trees show the effect of water than he discovered a deleterious effect on his worms. A change from the irrigated to trees that had not been irrigated checked the trouble, restored the good condition of the worms, and they made good cocoons. So in Los Angeles, some parties irrigated their trees; and in a letter written from that county, the writer says: "It is to this cause I attribute the failure of some parties later in the season with trivoltines —finding in every case of failure the plantation had been irrigated, while

the successful parties avoided this error. The trees should not be irrigated within four or five weeks of the time of feeding the worms, otherwise the leaves will become watery, sour and unhealthy food."

If the worm is so sensitive to the effects of irrigation, is it any wonder that it becomes diseased in countries where a shower or two a day is the rule, and a day free from rain is the exception? Or is it strange that California should be counted superior for the silk-producing business?

These experiments have cost me a great deal of anxiety and trouble, days and nights, weeks and months of alternate hope and despair, besides many thousands of dollars; still I give them to the public freely, and believe they are worth to the people all they have cost me, and ten times the amount they would have cost the State, even with a fair and honest fulfilment of the promises which, through her Legislature, she made to induce them, but which have in effect been shamefully and most unfairly repudiated.

LESSONS DRAWN FROM EXPERIENCE.

From experiments already made in this State, and particularly from those made the past season, many hints and conclusions may be drawn which will be of immense value to those hereafter engaged in the silk-producing business. I propose to name these conclusions in the order in which they occur to me, and to comment somewhat on the facts which warrant them.

First—That it is better that the eggs should not be kept back from hatching but very little, if any, past the time they would naturally hatch in a room in the north side of an ordinary house. But if it is desired to keep any back for late feeding, they should be put away in the place it is intended to keep them, in the fall of the year, so that no possible change can take place in them before thus putting them away. They should be subjected to as little change of temperature as possible. Packing them in fine charcoal—that is, surrounding the box containing the eggs with charcoal, say three or four inches in thickness, is believed to be advisable. This precaution will secure them from any dampness, and at the same time tend to give them a uniform temperature, both conditions being very necessary to good preservation. Any other non-conductors of heat, such as wool or raw cotton, will do, in case charcoal cannot be handily obtained.

Second—It is better not to cut the mulberry trees back more than is necessary to keep the foliage within reach of the picker. It is believed that while in ordinary seasons no perceptible injury might result to worms fed on foliage from trees thus treated, yet in all seasons leaves grown on trees, the tops of which have been cut back short, while the roots are undisturbed, will necessarily be unnaturally rank and vigorous, and consequently too great a proportion of water, compared to the glutinous substances, will enter into their composition. The fact that cocoons raised from leaves plucked from cuttings in this vicinity were pronounced the best exhibited at the "Paris Exposition," led many of our silk culturists to suppose that in our dry climate there was no danger of inducing this improper composition of the mulberry leaf. A moment's reflection, however, will teach every one that there must necessarily be a great difference in this respect between the composition of the leaves grown on a mulberry cutting, which is a piece of a well matured limb of the tree put into the ground with no roots at all, and the leaves produced on a rapidly growing shoot, forced up from the stump of a tree which retains all the roots necessary to impart a natural vitality and

growth to its entire unpruned top. These two conditions are the very extremes of each other, and must necessarily produce as results—the composition of the leaves—the very extremes of each other.

Confounding these conditions, or not observing that they were dissimilar, has led to very serious mistakes, and I have no doubt, in many instances, to serious loss to silk growers the past season. In this view of the case, we would expect to find the more unnatural and unfavorable growth of leaves on the older trees, the tops of which have been entirely cut away, for the reason that the roots being larger and more vigorous, will force a larger quantity of water and acids into the leaves, and a greater number of these tender and vigorous shoots being clustered together, the sun and air cannot penetrate to rectify this malcomposition. Such has been found by practice to be the fact, and such fact is directly in opposition to the theory generally entertained by silk culturists in this State.

The practice of thus cutting back the trees and forcing humidity into the foliage, it is plain to see, can be but little less dangerous to the health of the worms than the practice of irrigating the trees during the time of feeding, and the practice of irrigation, as shown above, has been found positively fatal. Either practice blindly counteracts and destroys the greatest advantage California possesses, as a silk-growing country, over those countries having humid atmosphere and frequent rain during the feeding season. In view of the lesson above explained, I shall thin out my trees and only cut them back in the winter as much as is necessary to keep the branches within reach, and do the larger portion of pruning as I feed the worms—feeding them with the branches thus pruned off.

I have two or three cases directly illustrating the view above stated. One is in the experience of my neighbor Ballou, before referred to. He fed his worms until about the third moulting, from trees that had not been pruned at all. At about this stage his food gave out, and he commenced feeding them from some of my trees that had been closely pruned. The effect upon the worms was observable within three days from the time of change. He then commenced picking from a few of my trees that had not been closely pruned, and the good effect on the worms was equally rapid and striking.

My own experience a year ago the past season should have taught me what a harder experience and more close observation this season has taught me. It was this: When my worms were nearly done spinning, I found all or nearly all my matured leaves exhausted; and for the purpose of finishing up the feeding, I commenced picking the young leaves that had grown from the tops of the trees first stripped. These leaves, it will be seen at once, would necessarily be forced in their growth by a cause similar to that of close pruning. The effect was to check the rapid and healthy formation of cocoons by many of the worms, and the positive death of others, either before or after the cocoon had been commenced. This same experience has been the result of many other similar changes occurring within my knowledge.

Third—While a naturally sustained uniform temperature in the cocoonery is a very desirable condition when feeding, still, the changes of temperature, as indicated by the thermometer, do not have that effect on the worms in a dry, pure atmosphere like ours, that the same changes do in a more humid atmosphere. Hence, the artificial means usually

resorted to in European countries to keep up this uniformity does not become so necessary in this State as in those countries, and if resorted to and used here when unnecessary, the result is a positive injury. To comprehend this proposition, it must be remembered, that, as a general fact, any particular substance or body is a much better conductor of heat or caloric when saturated with water than when dry. Thus, with a certain thickness of dry cloth we may handle a hot iron, but if the same cloth be wet or damp it proves but little protection. The same rule holds good in handling a piece of iron full of frost. In the former case, the humidity, or water, conducts the heat from the iron to the hand, while in the latter it conducts the heat from the hand to the iron. In both instances suffering is the result. By an application of the same principle to the atmosphere in which we live and breathe, and which is constantly touching us, both externally and internally, we may discover the reason why we suffer so much more from changes of temperature in a damp climate than in a dry one. In other words, why, at a given low temperature, as indicated by the thermometer in the former, we need artificial heat to keep us comfortable, while, at the same indicated temperature in the latter, we are comfortable without it. Also, why, at a given high temperature, indicated in the same manner in the damp atmosphere, we feel oppressed with the heat, while in the dry we feel no inconvenience.

The silkworm, for the same reasons, undergoes a similarly increased degree of suffering in a damp climate, both from heat and cold, or from a high and low indicated temperature, while in a dry climate, for the same reasons, the changes in the temperature have a less effect upon it. This theory is strikingly proven to be sound by facts. All the authorities written from a European experience lay down the rule that the temperature of a cocoonery, in which worms are fed, must not be allowed to sink below sixty-five degrees, nor to rise above seventy-five degrees, while the experience in this State is that the worms remain lively and eat well at sixty degrees, and suffer no inconvenience at eighty degrees and even ninety or one hundred degrees of natural heat. Hence we may, in all ordinary seasons in California, dispense with artificial heat and all apparatus for decreasing the temperature of the atmosphere. Nature here seems to have provided the most favorable conditions for the successful rearing of the silkworm, and any interference with those conditions has, in every instance thus far, proved detrimental.

If artificial heat be resorted to at all, my opinion, formed from the experience of the past season, is, that it should only be used in extreme cases—say when the mercury falls below sixty degrees, and then only with great care that the cocoonery is well ventilated. Artificial heat seems to magnify any impurity in the air, and should only be considered and used as a substitute for a greater evil. It may well be doubted whether the change of the temperature, as produced by the natural changes of day and night, is not better adapted to the nature and consequent health of a worm than a uniformity of temperature at any particular degree, sustained by artificial heat, however applied. No animal or insect can eat all the time, and a wise Providence has appointed the night for a time of rest for all His creatures. Indeed, when I study the history of the silkworm, in connection with the habits of the people in the different countries in which silk culture is made a leading industry, I am led to doubt whether too great a departure from nature in the treatment of the worm has not been in some way the prime cause of the disease so prevalent in European countries. One

thing is certain—that in Asiatic countries, where the people themselves live more in a state of nature, and where they seldom resort to any artificial means in the treatment of the worms, disease among them has never prevailed to any extent, while in European countries, where almost everything in connection with such treatment is artificial, disease has become so chronic and fixed, that without constant renewal from other countries, the worm would there long since have become extinct. Science in the rearing of silkworms may be very well, but it should be that science which discovers the requirements of nature and carefully adheres to them. In a climate like ours, where all the natural conditions for the industry seem to have been provided in so favorable a manner, it is doubtful whether man can improve those conditions. Our study should be to learn what those conditions are, and how the best to conform to them.

To shield the worm from the direct rays of the sun, and protect it from the immediate currents of wind, to supply it with a sufficiency of fresh and healthy food, and keep the cocoonery clean in all its parts, and the air free from artificial impurities, seems to be about all we have to do to secure success in this pleasant and most profitable industry.

PROFITS OF MAKING EGGS.

I think I have proven to the satisfaction of all who have read this article, that while the past season has been, for reasons stated, the most unfavorable ever known in the State for silkworm feeding, still, had there been no artificial causes to prevent, the business would have been attended with satisfactory success. Also, that nothing has yet occurred to destroy confidence in the business, or in the least to mar the bright prospect of silk culture in the future, except the unfavorable construction and execution of the laws heretofore so wisely passed for its encouragement. This unfavorable action, of course, is but temporary, and cannot affect those hereafter to engage in the business. By it, however, the enterprising pioneers in the business, who risked their time and money in it when there were doubts about its success, have unexpectedly, and as I think wrongfully, been deprived of the means upon which they were induced to depend, to meet their necessary expenses, and to prosecute the business with energy and to good advantage in the future.

But this unfavorable action and its consequences I propose to speak of in the future, and will therefore dismiss it for the present, to consider a brighter and more pleasing side of this interesting subject. I refer to the *profits* to be realized from egg and silk culture in California. The first question asked by a prudent business man, when investigating any new business with a view to engaging in it, is, "Will it pay?" Californians generally ask, in addition, "How soon will it pay?" These questions I propose to answer. In doing so in the most concise, and probably in the most satisfactory manner, I will state the result of some past transactions, as matters of fact, and then show the favorable prospects of the business in the immediate future.

In eighteen hundred and sixty-eight, I fed the leaves from three and one-half acres of land covered with two-year-old morus multicaulis trees. The trees had been grown from cuttings where they then stood. They had been cut back in the spring or winter, close to the ground, and the tops used for cuttings, so that they did not furnish much over half the early foliage they would have done had they only been pruned with an eye to that purpose.

The result of that operation, concisely stated, is as follows:

RECEIPTS.	
486 ounces and 13½ pennyweights of eggs, sold Hentsch & Berton, at $4 per ounce	$1,946 70
Eggs retained for self and sold other parties	1,897 50
Perforated cocoons sold	75 30
Total	$3,920 00
CONTRA.	
Labor and other expenses	472 00
Net profits	$3,448 00

The feeding was commenced on the first of June. On the twenty-fifth of July it was fully completed, and the eggs all made. On the seventh of August I had my money from Hentsch & Berton, and could have sold the entire product to them.

Here is a profit of one thousand dollars per acre the second year from planting the trees, and the time consumed in making it only sixty days. I will here state that I stifled the worms in a large number of cocoons, enough to have made at least twenty-five ounces more of eggs. I have heretofore estimated the land at four acres, but on measurement find but a small fraction over three and one-half. I will also state that from the same trees, in the following August, I fed about the same number of worms of the Japanese trivoltine variety, but as I did not want eggs from them, and as there was no market at that time for whole cocoons, I gave most of them away, and I suppose the silk made from them will some day float over our State Capitol and the Capitol at Washington in the shape of star spangled banners, being manufactured for that purpose by Joseph Neumann, of San Francisco. I will also state, although it will not properly be a basis for calculation of future profits, that from these same trees, last winter, I sold over one thousand dollars worth of cuttings, and have now growing, from the balance of the cuttings taken from them, about two hundred thousand thrifty one-year-old trees.

I will also mention that but for the unfortunate mishap to my eggs, last spring, the product of my this year's feeding would not have been less than four thousand ounces. Hentsch & Berton had made me an offer of three dollars and a-half an ounce for all I could make. Attention is now called to some successful operations for eighteen hundred and sixty-nine. H. G. Ballou, of Yolo County, writes me as follows:

"I obtained the foliage of a lot of two-year-old trees growing on the tenth of an acre of land. The trees were very uneven in growth, having been sadly neglected, yet they yielded six hundred pounds of leaves. At this rate, the foliage from one acre would be six thousand pounds. From these leaves and some obtained from another source, I fed the worms from an ounce of eggs of the French variety. It took fifteen hundred pounds to bring them to maturity. They produced sixty

ounces of eggs and twelve pounds of cocoons, after being perforated by the hatching of the moths. These, at four dollars an ounce for the eggs and seventy-five cents a pound for the cocoons (export prices), would be worth two hundred and forty-nine dollars. At this rate the product of an acre would bring nine hundred and ninety-six dollars. This is an exceptional year—the worst ever known for the business in California. Skilled Chinese labor can be obtained for one dollar per day. The cost of cultivating an acre of two-year-old trees and picking and feeding the same to the worms from four ounces of eggs would not exceed two hundred dollars. This would make seven hundred and ninety-six dollars as the clear profit of one acre the second year. The labor being light and pleasant, can be participated in by the different members of a family, and all completed within sixty days, leaving the balance of the year for other pursuits."

T. B. Flint, of Sacramento, fed the worms from a little less than three ounces of French eggs, picking his leaves from the trees on an acre of land. Some of the trees were four years old; most of them, however, were but two years. He produced two hundred and eighty ounces of eggs and forty-eight pounds of perforated cocoons. He has sold one hundred ounces of his eggs at six dollars per ounce, and is holding the balance for more. Put them at five dollars, the price for which they have been sold this year by me, to go to Europe, and his receipts would be, for eggs, one thousand four hundred dollars; and for cocoons, thirty-six dollars; total, one thousand four hundred and thirty-six dollars. Deducting expenses of feeding—one hundred and seventy-five dollars—and the clear profits are, from one acre of land, one thousand two hundred and sixty-one dollars. I could name many other instances where the successes of this year's operation in this business have been equally encouraging.

It may be said that these are isolated cases. We will admit it; and will reply that had we all succeeded in the production of eggs as well as the parties above named, and there is no doubt we would have done so but for the artificial causes heretofore mentioned, every egg produced could have been sold to France and Italy for four dollars and fifty cents to five dollars per ounce. In proof of this proposition, besides the offer for my whole product above mentioned, I have had a number of parties from Europe, on their way to Japan, call on me for eggs, saying they would prefer the California product, if they could be procured. They all say that as soon as California can supply them they will no longer go to Japan, but will send their orders to us.

All we want, then, to secure this immense and profitable trade, is to produce the eggs and let Europe know her orders can be filled. I received a call from Dr. Tryski, of the Agricultural Department of Austria, a few days since, on his return from Japan, where he had been as a Commissioner on behalf of the Austrian Government, to investigate the silk business. The particular object of the Commission under his charge was to learn the nature of a malady in Japan that threatens to cut off the supply of eggs from that country. He states that of all cocoons set aside for eggs in Japan this year, from thirty to seventy-five per cent. were lost, and that the number of eggs produced was from thirty to seventy-five per cent. less this year than common. As a consequence, the eggs commanded from four dollars and fifty cents to five dollars per ounce. Notwithstanding this high price, there had been shipped from that country to Europe, before he left, one million three

hundred thousand ounces, at a cost (there) of about five million eight hundred and fifty thousand dollars.

The shipment was still in progress, and would probably reach two million ounces, at a cost of nine million dollars—a sum equal to more than half the entire value of all our agricultural products exported in eighteen hundred and sixty-eight, and equal to one-seventh of the whole value of our entire agricultural products of that year. I put the question to our people whether this trade is not worth securing, and particularly so when those engaged in supplying it can make such liberal profits as the facts above stated show? Dr. Tryski says this trade must fall into our hands if we will only prepare to supply its demands. The reason for his opinion he states as follows: For three or four years past, the Japanese have been complaining that their product of eggs has been falling off rapidly, and demanded a higher price each year. The European Governments, whose people were interested in the supply of these eggs, came to believe that the Japanese were deceiving their people, and that the decreased product was only a pretence to justify their demands. Hence the French, Italian and Austrian Commissions were sent out to investigate the matter. These Commissions have brought to light the fact that just before the silkworm commences to spin its cocoon, a small fly lays its eggs upon it. These eggs adhere to the worm and are carried into the cocoon with it. About the time the cocoon is finished they hatch, producing very small maggots. These insects prey upon the chrysalis, and having killed and devoured it, they emerge from the cocoon. If this trouble continues to increase for a few years, as rapidly as it has done for a few years past, the supply of eggs from that country will not only be cut off, but Japan herself will have to look to some other country for her annual supply. It will be seen that the trouble in Japan does not directly affect the production of silk, as the chrysalis and all the parasites can be destroyed before the cocoon is injured. But it does materially affect the production of eggs and the price at which they can be afforded, and, indirectly, the production of silk, for, to produce a certain quantity of eggs, fifty per cent. more cocoons have to be destroyed, while the ratio of loss remains as stated for the past season. Should that ratio double, Japan will have to give up the silk business, or, like Europe, secure her eggs from some other country.

All these facts afford a big subject for the consideration of the people of California. We lay directly in the road of this present great trade, and with a certainty that at no distant day we will be called upon to supply the European demand, and that we may also be asked to reverse the direction of the present trade and supply still a greater demand in Japan. There are plenty of trees to be had in our State at very low figures, and to those who have land it will now cost comparatively nothing to start in the business. The prospects of the business for good profits are tenfold better than those of any other agricultural industry now followed in the State. All parts of the State where cottonwood trees will grow will produce the mulberry tree with equal facility. All our grain producers in the great grain-growing districts should plant groves of these trees. Besides beautifying the country and rendering it more healthy and inviting, they will in a few years, with a little labor by the women and children, become a source of revenue equal to, if not greater, than the continually decreasing product of wheat. Another consideration may be mentioned in this connection. The principal labor of the silk-producing business is required to be done in May and June, when other work on the grain farms is slack, consequently its products to the

grain farm would be almost clear gain. Our grain farmers want a variety of products to fill up their idle seasons, and the culture of silk eggs is recommended as one at once pleasing and profitable. The consideration of the other branch of this business—the production of silk proper—I will now call attention to for a moment.

PROFITS OF SILK CULTURE PROPER.

The showing made above, of one thousand dollars net profits per acre from two-year-old mulberry trees devoted exclusively to the production of silkworm eggs, together with the certain prospect of a continuous foreign demand for such eggs, to the extent of over nine million dollars per annum from Europe alone, ought to create a sufficient inducement to attract the attention and induce action on the part of the people of our State, to secure that trade and supply the demand. We have all the natural advantages of soil, climate and location necessary to enable us to reap this golden harvest, not only for the present, but for the future, so far as human calculation can penetrate that future.

In presenting the profits of the production of silk eggs, I would not, however, have any one conclude that the egg business is the only or principal consideration in favor of entering into the occupation of silk culture in California. I look upon the egg trade as only a stepping stone to something better and more substantial, both to individuals engaged in it and to the State at large. I regard it as the immediate source upon which men of limited means can safely rely for an income while preparing for the prosecution of the legitimate operations of silk culture proper. When we have once become fairly engaged in the production of silk, the egg trade will become a secondary consideration. It will no doubt, however, continue as a valuable adjunct to the silk business, and will thus form one of the two reliable sources of profits.

Of the production of silk as a reliable and remunerative occupation for our people I propose now to speak. I cannot give actual experience in this branch of the business, but will draw conclusions from admitted facts. The climate of California is so favorable for maturing the mulberry leaves that we are enabled to adopt the Chinese and Japanese mode of cultivating—the same as the English have adopted in their East India possessions, and which is giving them such an advantage over the French and Italians.

I refer to the system of cultivating the trees as dwarfs and near together, something in the style of cotton plantations. By this system we can produce at each crop at least twice as much foliage per acre as can be produced by the orchard system—which the damp climate of Southern Europe compels the silk growers of those countries to follow. It is found by experience, in France and Italy, that one mulberry tree to the square rod of land is as near as it is advisable to plant As a consequence, but very little can be realized from a mulberry orchard until the trees have attained a good size. It is also found that trees ten years old, thus planted and cultivated, may, without injury, spare one hundred pounds of leaves per year. This would give an average product of sixteen thousand pounds of leaves to each acre of land. Doubling this for our product on the same amount of land, for one crop, and we have thirty-two thousand pounds. As we can take two crops of leaves per annum from our trees, as we cultivate them, without injury, our annual product would be to that of the French, on the same land, as four to one, or sixty-four thousand pounds per acre. Now, one hundred pounds of

leaves will produce one pound of reeled silk. Thus we would have six hundred and forty pounds of reeled silk as the annual product per acre. Reeled silk, of poor quality even, is worth seven dollars per pound anywhere in the world. California produced and reeled silk, from the trivoltine Japanese worms, has been sold in San Francisco, within a month past, at nine dollars per pound, and that from the annual varieties would be worth from twelve to fifteen dollars per pound. Taking seven dollars as the standard, and we have, as the gross product of one acre of land, four thousand four hundred and eighty dollars per annum Now let us see what must be deducted for expenses: Rent of land and cocoonery, we will say, would be fifty dollars; cultivation of land and feeding worms would not exceed eight hundred dollars; one person, say a Chinaman or a white girl or boy, whose labor is worth one dollar per day, can reel one-half pound of silk per day, equal to one thousand two hundred and eighty dollars for reeling six hundred and forty pounds of silk. Then our account would stand thus:

Gross receipts per acre	$4,480
Total rent and expenses	2,140
Net profit	$2,340

This seems like a big sum to be realized in one year, on one acre of land, as clear profit. Particularly does it seem so to us American and California farmers, who think we are farming on a small scale unless we have from five hundred to one thousand acres under cultivation. It is a big sum and a big profit; but it can be realized. Not, however, until we change our ideas and our systems of farming. We must put in more labor and less land. We must produce more valuable and less bulky products. So long as we are content to exhaust our soil in the production of wheat, at an annual average profit of from fifteen to twenty dollars per acre, and exchange the same for silk produced in foreign countries at so much greater annual profit per acre, we shall remain a poor agricultural people.

And when we can produce that silk at so much greater advantage than can those countries from which we are receiving it in exchange for our wheat, and neglect to do so, we can hardly escape being counted a stupid people.

The production of silk is as easy and as simple to learn as is the production of wheat or any other staple product of our State. The trees are as easily, and much more easily and cheaply grown than fruit trees. Anybody, in one hour's time in a cocoonery, can be taught how to manage and feed the worms and save and cure the cocoons for market. In three or four days time and two or three weeks practice, a woman or girl can become an expert in reeling silk, and then the whole process is mastered.

A reel costs but twenty dollars. So it will be seen that with but very little outlay of time and money, every family in our State who owns an acre of land can, in one year's time, become the producer of the most valuable and profitable article that grows from the soil, to wit, silk.

There is no necessity of any great outlay for a cocoonery or other preparation to go into the business. Every man who has a barn or stable can use this for a cocoonery for the time required for feeding worms

each summer. It has been found that worms do better in sheep folds or barns than in any other buildings—the manure proving an advantage, rather than an injury to them. The best way is to begin in a small way and build the business up by degrees, learning as you go along, and making the business pay its way. A few hundred trees will do to start on, and they can be increased as desired.

LOCATION.

In selecting a location for the silk business, the climate and soil must be taken into consideration. In regard to climate in California, there is but one thing to be guarded against. So universally is our climate adapted to the business in all its departments, that in all places, from Siskiyou to Los Angeles, where experiments have been made, they have proved successful—far beyond anticipation. The one thing to be shunned is the damp foggy climate of our summers and autumns in the coast counties. In every other locality in the State the climate may be said to be perfect.

In regard to location, therefore, it is almost impossible to give any definite advice. The silk business should be prosecuted by the farmers in conjunction with other branches of agriculture. The grain farmer should have his vineyard and mulberry plantation, also his sugar beet plantation—the management of which will not interfere with the sowing and harvesting his grain crop. Let every farmer so arrange his products that some one of them will give employment at all seasons of the year. His time will then all be employed, and he will enjoy an additional advantage of being pretty sure, if one crop fails, some of the others will succeed—thus insuring him against failure in his year's operations. With such management, agriculture will become certain, successful and profitable. And I am satisfied that silk culture will, in most every part of the State, thus managed, become one of the best and most paying adjuncts of the farm. One consideration in favor of this industry, that does not apply to any other, is this, that the trees will produce a crop of leaves in the dryest of seasons, thus placing the crop at least beyond the danger of the drought.

SOIL.

Any soil that will produce a healthy and vigorous growth of the various kinds of fruit trees, and more especially the peach tree, will also produce the mulberry in great perfection. It must be remembered, however, that fruit trees are valued for their fruits and not for their leaves, while the mulberry is valued for its leaves and not its fruit. Hence, it often happens in this State that mulberry trees are most valuable on lands where fruit trees are least valuable. The rich alluvial river bottoms —too rich and too much subject to overflow in the rainy or winter seasons for successful fruit culture—are good lands to be selected for silk culture. Hence in Italy, in the rich plains of Lombardy, and along the banks of the river Po, even within its levees, are found the most productive silk plantations. Lombardy, which has an area of only six thousand square miles—California having one hundred and fifty-five thousand—though one-third of all the arable land is annually in grain, exports annually fifteen million dollars worth of raw silk. An excess of alkali

in the soil should always be avoided. The tree will not flourish in it, nor will the worm do as well on the leaves grown from an alkali soil. It must not be inferred from the above that other lands than our river bottoms are not adapted to the silk culture—only, that they will produce the greatest quantity of food to the acre, and are better adapted to silk culture than anything else. Our foot-hills are eminently successful in the production of the mulberry tree and the cocoons. Indeed, it is believed that the quality of the cocoons raised on the high lands may be superior, but the quantity cannot be greater than the low lands will produce.

I am aware that in most countries it is laid down as a rule that the low rich land is not so well adapted to silk culture as higher, lighter and less rich soils

The reason given is that on the former quality of lands the mulberry leaf secretes too much water, and is not so healthy, and does not contain so much of the resinous substance which fills the silk vessels of the worms, and therefore does not make so much silk, or so fine, smooth and strong a fibre. This rule does not apply with so much force in California, where we have no rain from May to October, to be absorbed by the leaves or drank up by the roots of the trees; and consequently the leaves grown on our low bottom lands, along the rivers, are dryer and contain more resinous matter, and smoother and stronger fibre, than those grown on lighter and higher soils, in countries subject to frequent summer showers. It is a well established scientific fact that all vegetable substances grown in a dry climate, and without irrigation, contain more saccharine and resinous matter, and consequently more nourishment for man, beast or insect, than the same vegetables grown in a wetter climate. Our hay, for instance, has more resin, and consequently more nourishment in it, than hay grown in the Atlantic States or Europe. So with the leaves of trees. The mulberry leaf has more resin—and, as before intimated, this is the material which forms the silk—than the same leaf in damper climates. It must be remembered that after the month of May all our rivers, which overflow during the winter season, are within their banks, and their waters soon go down to low water mark, thus leaving the lands along their borders from fifteen to twenty feet above their waters. The principal portion of the leaves of mulberry or other trees standing on this land is grown after this period, when the soil is dry and in good condition—even better condition for making a healthy and even growth than if upon the hilly portions of a country where rain and drought succeed each other during the summer season. This evenness of the growth of the leaf without rain or other climatic change is of the first importance, and is one of the strong points in favor of our climate for silk culture. Another very strong reason for recommending the mulberry for our overflowed districts is found in the fact that they throw down very deep tap roots, as well as lateral roots, and are therefore not very easily washed out, but may be depended on to hold the soil to its place while the water is sweeping over it. This fact undoubtedly led the Italian Government to adopt this tree to protect their levees along the river Po and its tributaries, and we should adopt it along our rivers for the same purpose, thus making it contribute to the safety of our homes and the comforts of our families. I would not discourage the silk culture on our high land or in the foothills, but these lands are also valuable for grain farming, and the foothills especially for grape and tea culture—and while I would like to see the mulberry, the vine, the tea plant, the orange, lemon and some

other tropical fruits flourishing side by side, as they may, and in time will, all along the foot-hills of the Sierra Nevada and coast ranges of mountains, the whole length of the State, I am also anxious that our vast river bottoms shall be cultivated with something that will not require annual planting, and that will live and flourish and produce remunerative crops, notwithstanding the winter and spring floods. If there is any annual crop, or crop requiring to be planted every year, better adapted to these low bottom lands than another, I am of the opinion that crop is the sugar beet. This crop will grow and come to sufficient maturity for sugar purposes after the water leaves the soil. The production of sugar will, at no distant day, be one of the leading industries of the State; and the farmer on the rivers will find that he can very appropriately and handily cultivate the beet and mulberry together; not on the same piece of land—but that he can conveniently attend to a crop of each. He may also cultivate hops in connection with both, selecting for the latter his highest bottom land, upon which the water will remain the shortest time.

THE MULBERRY TREE—ITS PROPAGATION AND TREATMENT.

There are quite a number of varieties of the mulberry tree, but those most commonly used in the production of silk are the morus multicaulis, morus alba and morus moretti. The multicaulis is the most rapid grower and produces the greatest quantity of leaves. It is the easiest propagated from cuttings, and is most easily managed as a dwarf for plantations. It is not so much used for feeding worms in European countries as the alba and moretti, as its leaf absorbs more water, and it is believed, therefore, not to be so healthy in those wet climates for the worm. It is very doubtful whether it is liable to this objection in this climate. It is certainly preferable to feed worms on until they are from ten days to two weeks old, as the leaves are more tender. Indeed, worms fed entirely on the leaves of the multicaulis have done well in this State and made most excellent cocoons. The alba and moretti are very nearly alike in their habits and appearance, the greatest difference being in the color of their berries—the former bearing white berries, and the latter those of a purple color. The wood of these varieties is harder and more compact than that of the multicaulis, having very much the appearance and texture of the locust. The tree makes a most rapid and beautiful growth, and forms one of the most beautiful and agreeable ornamental or shade trees. Though not so easily propagated from cuttings as the multicaulis, yet they may be readily grown in this manner. The cuttings should be taken from the tree, in this State, in December or January, and immediately planted in the ground; though, if the ground is not ready, they may, like the cuttings of multicaulis, be kept until February or March, by burying in a sandy, dry soil, or placing them in a cool cellar. For planting they should be cut up into pieces containing from two to three eyes each, and placing them in an upright position in the ground, should be covered so that the upper end will be about an inch below the surface. Cuttings of the alba and moretti varieties have been made to succeed well by laying the cane full length in a trench and covering it three or four inches. It is also thought by some that for these varieties it is better to use the ends of the limbs for cuttings altogether, and leave them, say a foot long, inserting nearly the whole length in the ground. It is much harder to propagate these varieties from cuttings than the multicaulis, and I would recommend exper-

iments according to different modes. In all cases and for all varieties, the land should be well pulverized and subsoiled, to insure success.

There is no tree that will bear so much pruning in the summer season and flourish under it, as the mulberry. Indeed, this tree seems to have been made with a constitution especially adapted to the use to which it is applied. The mulberry tree was made for the silkworm, and the worm was made for the mulberry tree—a perfect adaptation to each other, and both to the wants of man or woman.

The mulberry tree may also be propagated from the seed, which is a little larger than a mustard seed. In this State the seed should be planted in April or May, in damp but warm soil, well cultivated or pulverized. It should be covered from a half inch to an inch and a half. If the soil is very damp and not liable to dry on the surface, a half inch is a plenty. The soil should be of that nature that it will keep damp to the very surface. I planted from two to three acres last year with seed of the alba and moretti, and only succeeded in making the seed come up on about an acre and a half. They were planted on the Sacramento River, about two miles above Sacramento. In the winter of eighteen hundred and sixty-five, before a levee was built along the river, the water ran across the land, and washed the surface soil, a vegetable mould, entirely off of about an acre and a half of the land, leaving a light sandy clay, through which the moisture rose to the very surface—so much so that until ten or eleven o'clock of the warmest days in May the surface looked wet. Here, on this land, the seed came up and grew well, while on the land directly by its side, but upon which the vegetable or surface soil remained, very few of the seeds germinated, and none came up. As the sun warmed up the surface of this vegetable soil, the moisture receded, leaving the surface very dry and hot; and, as the tender leaves of the young trees reached this dry soil they withered or baked, and died, while the moisture of the sandy and clay soil, reaching the very surface, protected and invigorated the young leaves, and forced them up. I have been thus particular in giving my experience in this matter, because almost every one else who planted seed made an entire failure, and I made a partial success, in consequence of the peculiar condition of some of my land.

I would recommend in putting out plantations that about one-half of the trees be of multicaulis and the other half alba or moretti; the former to be fed to the worms until the last moulting, and the latter after that period.

PERMANENT PLANTATIONS.

My plantations are set with trees, six feet by two. Every one hundred and fifty feet one way I leave a wagon way, and every four hundred feet the other way. The former ways are twelve feet wide and the latter sixteen. I think these distances will do well for the multicaulis, as this tree sends its branches up in the direction of and pretty close to the body of the tree, and is easily managed as a dwarf. The alba and moretti are of a different habit. They incline to spread, throwing their branches out horizontally, and growing with greater determination to make large trees. From this I conclude that these trees may be required to be planted further apart, say four by six, and maybe more. These latter varieties should be made to branch from the body about four feet high, thus making a head within reach from the ground. The multicaulis may be headed even lower.

COCOONERY.

Having selected your location and planted your trees, the next thing to be prepared for use is some place to feed your worms—a cocoonery. Any rough building will do in this State. Our climate is so mild and favorable we can dispense with many of the extra conveniences or necessaries required in many other countries, and, consequently, with much of the expense; but you cannot feed the worms in the open air, for the reason that they must be protected from the sun as well as the night dews; also from the birds. If you have a barn on the place which can be devoted to this use in the summer season, you have already a cocoonery. All you want to do is to put up upright standards, to which, at about two and a half feet apart, fasten cross pieces and lay on loose boards for shelves, and your cocoonery is made. At about eight feet from the floor your cross pieces will want to extend across the alleyways between the shelves, on which lay a temporary floor to stand on while feeding the worms on the shelves above. All the framework and boards for shelving can be so made that they can easily be put up and taken down, and kept from year to year. Be careful to provide a plenty of ventilation. This may be done in any manner most convenient, so that the wind does not blow directly on the worms. The worms also want plenty of light, but, as before remarked, must not be exposed to the direct rays of the sun.

Of course the size of the cocoonery will want to be regulated by the number of worms to be fed. It is estimated that five hundred thousand worms will require, for the first age—that is, from hatching until the first moulting—about one hundred square feet of surface or shelving. For the second age—from the first to the second moulting—about two hundred square feet; for the third age, about four hundred and fifty square feet; for the fourth age, about eleven hundred square feet; and for the fifth age, about twenty-five hundred square feet of surface or shelving. The space required will be greater or less, in proportion to the greater or less number of worms to be fed. In Germany, nearly every farm-house is devoted to the purposes of a cocoonery during the feeding season, and in many cases this same practice may be adopted here, especially where the house is large and the number of worms to be fed is small.

HATCHING THE EGGS AND FEEDING THE WORMS.

Now we come to the most delicate and important, as well as most attractive and interesting portion of the silk culture, and upon the skilful and successful management of this department of the business depends all its profits, and consequently all the advantages that can be urged in its favor. To this particular branch, then, I would ask the especial attention of every beginner. There is nothing intricate or difficult about feeding and taking care of the worms and making a sure crop of silk, but there are certain things necessary to be done to insure success, and these things are necessary to be done at particular times, and they must absolutely be done at those times. He who would successfully feed silkworms must have a time for everything and everything in its time. Having impressed this idea of perfect regularity and certainty upon the minds of those who propose to feed and care for a family of worms, we will go at once to the work of hatching them from the eggs.

The eggs having been kept in some place where the thermometer never rises above forty-five or fifty degrees, and where they are in no danger of sweating or becoming mildewed, should be taken out when

desired to be hatched, and gradually exposed to the heat of the outside air. A sudden change from cool to very warm atmosphere is considered detrimental. From the middle of May to the first of June is about the proper time to hatch the first crop in this State, as the rainy season is generally past by that time, and the weather has become sufficiently warm and settled.

After remaining in a warm atmosphere at this season for five or six or eight days, the little worms will begin to show themselves, and the moment they make their appearance they begin to look for food. Place some tender leaves from the multicaulis on the paper, and they will at once begin their occupation for life—eating.

At the end of the first day after they begin to hatch, take all the worms off the paper containing the eggs and place them on separate papers. This can be done by removing the mulberry leaves upon which they are feeding. Do the same thing for about three days. By this time all the eggs that are good and strong are likely to have hatched. The balance may be thrown away. All hatched the first, second and third days must be kept separate, and for this purpose may be marked first, second and third, by a pencil, on the papers containing them. The object of this division is that you may feed and treat those of the same age exactly alike. One day's difference in the age of an insect that has only from twenty to thirty days to live, it must be remembered, is a good deal. And especially is this the case with the silkworm, which, in that short period of time, goes through five different and distinct periods of existence. The transformation from one of these periods to another consist in shedding the skin, or, in other words, laying off the old garment. These changes are called moultings. While undergoing any one of these five changes, which occupies from twenty to twenty-four hours, dependent on the health and vigor of the worm, they will not eat, nor must they be fed or in any manner disturbed. In this fact will be seen the reason for keeping each day's hatching separate; for when the first day's hatching is five days old they begin their first moulting, and if the second day's hatching are mixed with them the latter are not ready to moult, and require feeding. To do this disturbs the former and endangers the successful operation of laying off the old garment, and even endangers their lives. The same difficulty and danger will occur at each several moulting. *Hence the great necessity of keeping them separate. This is one of the necessities that must be done.*

Now we will go back and attend to those little fellows that we took from the papers containing the eggs and placed upon other papers, and attend to their wants. Their first and almost only want is food. There is one thing, however, of almost as much importance to their healthy existence that they *do not* want, and that is they do not want to be too crowded or thick together. For the first few days they require to be fed on the most tender leaves, which should be given to them directly from the tree, perfectly fresh and only a few at a time, removimg them as often as those last given them are consumed. As the worms grow older and stronger, give them older and stronger leaves. But this rule should always be most faithfully adhered to: *Feed them but few at a time, renewing them as often as those last given them are consumed.* If this rule be strictly followed, you will never see wilted or dried leaves, but always fresh ones, before the worms. There is but one exception to this rule of fresh leaves, and that occurs on the days of moulting, when, as before remarked, they should have none. There is no absolute invariable rule as to the exact age when the several moultings occur, for the reason that the life of the

worm, from the day of hatching to the spinning of cocoons, depends in a great degree on the favorableness and uniformity of the weather, and the frequency and regularity of feeding with fresh food and the quiet allowed them while moulting. The different varieties of worms also vary as to the period of their whole lives, as well as to the time between each moulting. As a general rule, however, under favorable circumstances the several moultings will occur about as follows: The first moulting when five days old; the second when nine days old; the third when fifteen days old; the fourth when twenty-two days old. Whenever the worm is about to commence moulting, he leaves off eating, attaches himself rigidly to the most handy thing he finds, and stretches up his head as if in pain. The fore part of his body increases and the latter part decreases in size, and the whole body assumes a glossy appearance. Thus he continues to swell up about the head until the old skin bursts and slips back towards his tail. He then crawls out of the old skin a changed being, looking shriveled and gaunt and hungry, and at once begins to look for his food. When care has been taken to keep only the worms of the same age together, and they have been fed carefully and uniformly, all the worms on the same paper, or on the papers of the first day's hatching, will go through these several moultings at the same time. And so of the second and third day's hatching. Thus, when one worm wants to be quiet, and absolutely requires it, so does every other one on the same paper, and consequently all are gratified—no one crawling over or disturbing the other. Experience teaches that upon a proper separation of the several days' hatching depends, as much as upon any other one thing, the success of a feeding and consequent success of a crop of silk.

Next to proper care in feeding often and on fresh food, and keeping the worms of the same age together, it is important, as intimated above, that they should be properly thinned and spread out over greater surface as they grow larger. They should have room, so as not to be required to lay one upon the other too much. This is necessary, both for convenience in getting at their food, and is very essential to the healthful growth and maturity of the worm. Besides the exercise of judgment, assisted by the appearance of the worms themselves, it may be well to be guided in thinning them out by the rules laid down in this article as to the space required for five hundred thousand worms in the several ages. To make this subject familiar, I will repeat here the space required for that number of worms, in connection with the amount of food they will require for consumption during each of the several ages: Five hundred thousand worms, for the first age, should be allowed one hundred square feet of surface, and it is estimated that during this age, or the first five days of their existence, they will consume one hundred and twenty-five pounds of leaves. During the second age, or the next four days of their lives, they should occupy about two hundred square feet of surface, and will consume three hundred and seventy-five pounds of leaves. During the third age—from nine to fifteen days old—they should occupy about four hundred and fifty feet of surface, and will consume eleven hundred and fifty pounds of leaves. During the fourth age —from fifteen to twenty-two days old—they should occupy one thousand one hundred feet of surface, and will consume three thousand four hundred and seventy-five pounds of leaves. During the fifth and last age —from twenty-two to thirty-two days old, the age of going to spinning —they should occupy two thousand five hundred square feet of surface, and will consume nineteen thousand eight hundred and seventy-five

pounds, or about two thousand pounds or one ton per day—making in all about twenty-five thousand pounds, or twelve and one-half tons, of leaves. It will be seen by the above statement that, while the worms occupy but little space and eat but little during the first half of their lives, they spread out rapidly and eat voraciously during the last half. Consequently, while the work of feeding and attending to them is light during the first three ages, or first half of their existence, it becomes very considerable during the last two ages.

These considerations have led, of late years, in most countries where to economize labor is desirable, to the adoption of what Mr. Prevost styles the California mode of feeding. After the first two moultings, when the worms begin to move about pretty easily, instead of picking the leaves one by one from the tree and feeding them to the worms on a flat surface, you take your pruning shears and horse and wagon and go into your plantations, cultivated in dwarf form as heretofore indicated, beginning at one side of the field and clipping off a portion of the straight shoots from each tree as you follow the rows back and forth, throw them by the armfull into the wagon until you have gathered the required quantity for one feeding, and drive to the cocoonery. Taking an armful of these branches, you lay down four in the form of a square on each paper containing worms. The worms gather along the branches and devour the leaves. The next feeding you proceed in the same way, laying the branch each succeeding feeding on those before laid on; thus you build up a little square pen for each collection of worms all through your cocoonery. The worms work up from the stripped to the fresh branches, and in this way they are raised from the flat surface, where they are necessarily in contact with their own offal and filth, up into the air above it. This mode of feeding has many advantages, both in the manner of cultivating the mulberry tree in plantations as dwarfs, to which it has led, and in the feeding of the worms. First—You can gather the food much easier and faster. Second—You can produce much more to the acre than by the old orchard style of standard trees.

First—The greater facility of handling a given quantity of food.
Second—The greater length of time the leaves thus adhering to the branches will remain fresh.
Third—It gives the worms a freer circulation of air, keeps them clean, and consequently more healthy and vigorous.

I have heretofore omitted speaking of the number of times worms should be fed during the twenty-four hours. Some say eight, some say ten, and so on, but I would lay down no absolute rule, but would say, keep some fresh food constantly within the easy reach of them all—night and day. Adapt the artificial feeding, as near as you can, to their mode of eating in a state of nature on the living and growing tree. In this, after all, is the great secret of success. Study to adapt every operation connected with the cocoonery, and the treatment and feeding of the worms, as near as you can, to their wild nature. Keep the building clean and sweet; let no other smell be perceptible but that of the fresh mulberry leaves; raise no dust; make no noise; move about quietly; give them their food carefully. Indeed, let them go through all their changes and transformations as though in the quiet recesses of their native forests, only protecting them from the excesses of nature which are injurious to them—such as exposure to the rays of the mid-day sun, to the storms of wind or rain, to the flashes of lightning or peals of

thunder. Also protecting them from their natural enemies, such as birds, rats, mice and ants.

In moving the worms from one place to another, in order to thin or spread them out, never touch or handle them. While feeding them with leaves, when you want to separate them, put on a few fresh leaves, and as soon as they are well covered with worms take hold of a leaf carefully, and lifting it up slowly, lay it down on the place to which you wish to remove it. The same way when you want to remove all the worms from any given place or paper for the purpose of throwing out the litter—the stems and offal of the worms. This should be done at least every other day while feeding on the flat surface, with leaves. To separate them after they have commenced feeding with branches, move the branches lately put on while the worms, or a portion of them, adhere to them. And when you wish to throw out the litter and offal, take hold carefully, lifting up the pen or top portion of it; let another person empty off the litter into a basket or sack.

Immediately after the worms have fully finished moulting, they should all be removed from the place where they have deposited their skins, as these become very offensive and injurious to them.

SPINNING COCOONS.

When the worm is within three or four days of its spinning time it has acquired its greatest size and most ravenous appetite and formidable appearance. From this time until it begins its cocoon it seems to lose its appetite and diminish in size and weight. It also from that time gradually changes its color from a rank greenish white to a light pearly yellow, and generally to assume the appearance of maturity. The last three or four hours before going to spinning it becomes in a degree translucent, and its skin about the neck becomes somewhat wrinkled. It becomes restless and uneasy, frequently raising its head as if to reach something; and if it eats at all at this time it does so daintily, as if feeding on dessert. These signs admonish the keeper to prepare for the harvest—if not a golden, certainly a silken harvest. At this stage the worm begins to hunt some nook or corner out of sight, in which to wind its body in a silken shroud, and the sooner it can find a suitable place to suspend or fasten its cocoon the more perfect and complete that cocoon will be made, and the more valuable will be the harvest to be gathered. Hence it is very important that good provision be promptly supplied in which the worms can all spin their cocoons. Many plans for this purpose have been invented. The best—or such as combine the qualities of economy, cleanliness and adaption to the seeming fancy or real wants of the worm—should be adopted. Common wild mustard, cut just before the maturity of the seed, and the branches brought together and tied at the top, and laid between or set up inside the pens of branches upon which the worms have been feeding, is very good. Also boughs of willow, or any other small and bushy twigs, similarly prepared, may be used; but clean wheat straw, cut off good length and tied up at each end, in bunches of three and four inches in diameter, and then pressed longitudinally so as to make a bulge in the centre of the bunch, is about the best plan for this country, as it can be obtained everywhere, and the worms seem to like it as well as anything. It has this advantage, that the cocoons are easily gathered from it, and with very little loss of floss silk—no dirt adhering to the cocoons.

After the worm commences the cocoon, it must not in any manner be disturbed, and if allowed to proceed unmolested it will finish in from three to five days. In from six to eight days after the cocoons are formed they should be gathered, and all except those selected for hatching, must be exposed for three or four days to the direct rays of the sun, to kill the chrysalis within. It will be well to expose them longer, so as to be sure to completely dry up or evaporate the fluids or moist substances of the chrysalis—otherwise there is danger of injuring the silk, by staining it with the putrid matter of the decaying chrysalis. It is also important that this chrysalis be thoroughly dried, to prevent the bad smell that would otherwise be emitted from the cocoons when stored away, and also to prevent their heating. If you are prepared to reel the cocoons at home, this work may be now commenced; or if the cocoons are to be sold, they are now ready for market. But in any event it must be remembered that mice will destroy the cocoons if not kept out of their reach. So fond are mice of the chrysalis that one mouse in a very short time will destroy hundreds of dollars worth of cocoons.

PRODUCING EGGS.

Before exposing the cocoons to the sun, if it be desired to save any eggs for the reproduction of the worms, cocoons must be selected for this purpose and placed in any convenient place for hatching out the moth or miller. In order that the size and vigor of the worm may be continued or improved from generation to generation, it is important that only the very best cocoons should be chosen for propagating the species. Select the largest and most regularly formed, and as near as may be an equal number of male and female. The cocoon from which a male moth will hatch is generally smaller than that containing the female, and is depressed in the middle and more pointed at each end, while that of the female is more oval or egg shaped, and blunt at each end. All the floss or loose silk should be carefully stripped from the cocoons thus selected, that it may not entangle the moths when they come out. If the weather is warm and favorable, the moth eats its way out of the cocoon in about twelve days after it is completed.

Immediately after emerging, the male seeks the female for the purpose of pairing. And as the reproducing qualities of the eggs from which you are to propagate the species depends entirely on the operation, it becomes important that every female be paired with a male, and the sooner this is done after she comes out of the cocoon the better, as the more sure will she be to become properly impregnated. If left alone, there being a large number of males and females all mixed promiscuously together, it is not probable that more than two-thirds of the females will be properly paired with a male, and hence a large number of your eggs would be valueless. Hence, then, is work necessary to be done, and done thoroughly and at the proper time. The moths generally come out of the cocoons in the morning, before nine o'clock each day, in about the same order that the worms commence spinning cocoons. Hence, when you see the first moths, you must make it a regular stated business to be on hand about half-past eight each morning, and first pick out all the moths that are coupled, by taking carefully hold of the wings of each and lay them one side on a paper, being careful not to separate them. When you have removed all that are coupled, pair each female not already paired with a male, and lay them one side in like manner. When they have remained together about six hours, you must just as

punctually be on hand and separate them. Taking hold of the wings of the male with one hand and those of the female with the other, pull them slowly and carefully apart. You have no further use for the male unless, as sometimes is the case, there should be a greater number of females the next morning than males. To meet such a contingency, it is prudent to keep some of them over by putting them in a box, which cover over to keep them in, giving them plenty of air. Lay the females on soft paper of uniform size and thickness, such as you want them to deposit their eggs upon. Very soon after being separated from the male the female exudes a drop of yellowish matter, which will stain the paper, and in order to have your cards of eggs look clean and tidy, it is well to keep a sort of common blotter, on which all the females may be laid until they have freed themselves of this filthy substance, and then remove them to the egg card. This having been done, the female commences her last act—depositing her eggs. They lay on an average about three hundred apiece, and they will lay nearly all of these between the time of separating, say at two o'clock P. M. and dusk. The eggs laid during this period are generally considered the best and most vigorous, and that they may be kept separate, it is well at this time to transfer all the females to other cards, on which to deposit the balance of their eggs. Mark the first cards No. 1. and the cards on which the moths lay the balance of their eggs mark No. 2; and if your worms be of the annual variety, or if they be of the trivoltine variety, and you do not want to produce another crop of worms the same season, lay them into a box, which with care fasten up so as to keep the mice out, and put them in a dry, cool place to winter over. If they be of the trivoltine variety it is safest to put them in an ice house, especially if it be not as late in the fall as October. This variety will not generally hatch later than this month. A tin or zinc box, perforated with holes so as to give the eggs plenty of air, is the best. This same routine of pairing and separating the moths and securing the eggs must be gone through with each day, until all the moths have come out of the cocoons and laid their eggs. Having performed these last acts and left their eggs behind them for the propagation of their species, having, as it were, outlived their usefulness, the moths, both male and female, die a natural death. If your worms are of the trivoltine or polyvoltine variety, and you wish to produce another crop of silk in the same season—and in this State three crops in a season may successfully be raised—you have but to let your eggs remain in a warm place, and in about eight days they will hatch, and you can conduct the worms through the same process again and reap another harvest of cocoons. I should have mentioned that the room in which the moths come out of the cocoons, are paired and lay their eggs, should be kept somewhat dark; especially should it be dark while the moths are paired, or they will become separated before the proper time. The male moth is of a darker color, smaller and more active than the female.

CULTURE OF THE GRAPE.

REPORT AND MEMORIAL PRESENTED TO THE SENATE OF CALIFORNIA, AT ITS EIGHTEENTH SESSION, BY THE COMMITTEE ON CULTURE OF THE GRAPE.

Your Committee on the Culture of the Grape, realizing that the subject matter intrusted to them concerned one of the most vital interests of California, have given it careful consideration, in all its bearings, and as the result of their deliberations, beg leave to present the following report, together with the accompanying concurrent resolution and memorial to Congress:

REPORT.

Perhaps no other country on the globe, and certainly no other portion of the American continent, is so well adapted, in all respects, to the successful and profitable cultivation of the grape, as the State of California, which, indeed, seems as it were, to be the natural home of the grape, where it grows readily, from cuttings, upon the most arid hillsides, and without irrigation.

The culture of the grape gives more employment to labor than any other branch of farming, and its development will tend greatly to the rapid peopling of our State with immigrants from among the honest, industrious and moral natives of the wine growing districts of Europe.

To the immigrant who comes to California without means, with the expectation of a dependence upon farm labor for support, the districts devoted solely to the culture of the cereals offer small inducements; for, while the demand for labor is comparatively great and the pay liberal, for a short period during the rush of gathering and harvesting the crop, it is succeeded by a long interval of inaction, when there is little or no need of hired labor, and the employé is turned adrift, perhaps to suffer from want before another job offers; besides, in our country, where the use of labor-saving machinery in agriculture is so universal, the demand for manual labor is comparatively small, and is decreasing every year. This is not the case in vine culture; the careful planting and annual pruning of the vines, and the gathering of the ripened fruit, can only be done by the employment of human hands.

The growing of the grape is not in conflict with any other branch of agricultural industry, but can be made auxiliary to nearly all other kinds of farm labor, as for example: if you raise grain, your seeding is over before the labor of pruning the vine commences, and at the time of grain harvest there is little or no work required in the vineyard; and if the cultivation of the mulberry and feeding the silkworm should prove a success in California, its prosecution will present no conflict with the vintage work. And in a country blessed with so genial a climate and fruitful a soil as California, where all these several branches of agricul-

tural industry—grain growing, stock raising, vine culture, and rearing the silkworm—can successfully be blended together and practiced in the same district, skilled and willing labor can find an abundant field, with continuous employment, at remunerative wages the year round. Let this fact be known to the world, and this alone will do more to encourage and induce immigration hither than any proposed expensive scheme of "Immigrant Aid Societies," with State appropriations, which, at best, will go no farther than to pay the travelling expenses of the immigrant to our State, and then leave him destitute, a stranger in a strange land, with no branch of industry provided for him wherein he may labor and acquire the necessaries of life.

A large portion of California, in its present condition, is neither useful nor ornamental, bearing no green trees, and yielding no pasture for grazing purposes; yet, how valuable and ornamental could nearly the whole—of what is to-day, so unseemly—be made, by planting vines and fruit trees.

Meteorologists tell us, that by planting trees and shading the dry ground, the moisture of the atmosphere is increased and more rain produced; and surely California, with her long, dry, torrid summers, needs all the advantages which would accrue from having her barren lands cultivated and her hillsides covered with verdure, thus increasing the supply of rain, and materially benefiting the grain grower and grazer.

The vine, even when growing upon the thin, and almost arid soil of the mountain slopes, does not suffer from drought, as do the grain crops of the valleys below; indeed, it is to the vineyards, upon these otherwise barren and desolate hillsides, that we must look for our most delicate and finest flavored wines and brandies. Neither does the cultivation of the grape exhaust the soil as the cereals do; there are vineyards in Los Angeles said to be one hundred years old, which still bear full crops every year.

Much of the soil of California is only suitable to the growing of fruits. In order to make fruit growing a success, it is necessary to grow all of the various varieties to which our soil and climate may be adapted; the most important of which, for general culture, is the grape, of its various kinds. Nor can fruit growing be made a success without, to some extent, using the still, as there is always a considerable portion of the crop that must be distilled, or suffered to go entirely to waste.

In order to get our people to plant vines, and enter with spirit into the development of this leading interest of California, the General Government must be induced to pursue a different policy toward the grape interest from that which at present prevails; it must call away from the vine grower the lynx-eyed Tax Collector, with his red tape snares, ever ready to pounce upon the unwary and seize and confiscate, not only the still and machinery, and crop on hand, but even the land whereon the still stands, and the house wherein it is located (even though it be the homestead), and all this because of some technical violation of a law, so obscure in its meaning and so conflicting in its provisions as to be beyond the ordinary comprehension of the humble wine-maker, and which even the Government official himself, who makes the seizure, cannot intelligibly explain.

The presence of a vineyard greatly adorns and beautifies the surroundings of the homestead, giving it a bright and cheerful aspect, which yields a continual feast of beauty for the eye, and fills the heart with a sense of quiet happiness and content, strengthening the love of home and the simple enjoyments of rural life.

It is the universal remark of observant travellers through the vine-lands of the world, that no communities are so contented, and happy, and domestic, in their tastes and habits, or so strongly attached to home, kindred and country, as the dwellers among the vineyards.

Every California farmer should naturally desire a vineyard, and would do so, if the Government afforded them proper protection in that branch of industry; whereas, now, every man who has planted vines in years past wishes that he had not done so, as he feels that in working up its small produce he is exposing himself to arrest, and his machinery and crops to confiscation, and liable to have himself and family turned adrift upon the world as criminals.

A more iniquitous and ruinous system to our State could not have been devised by the shrewdest and most implacable of her enemies.

The interest of the State, and of the General Government also, would be better served by relieving the fruit growers from the onerous burden of being placed upon the same footing, and subject to the same rules and regulations with their stills, as the grain and malt distillers; their cases are by no means analagous, for, with the latter, distilling is their sole business, generally employing their entire capital and time; whereas, with the fruit grower, distilling is merely incidental to his vocation as a horticulturist, enabling him to save a portion of his ripened and perishable crop, which would else be wholly lost to him and to the market.

The General Government would gain more revenue by giving the fruit distillers exemption than it will by its present policy. The consumption of those articles that pay duties would be more gain to the Government than the small taxes now collected, after deducting the heavy expenditure of keeping up the army of officials necessary to watch every little vineyard.

In a few years, if the grape and fruit interest could have that protection or exemption so essential to foster and encourage it (which should be the true wisdom and policy of the Government), the shipping of wines, brandies, raisins and other fruits, from this State, would be a source of pride, not only to Californians, but to every American.

Your committee have not deemed it necessary to enlarge upon the various kinds of wine made in our State, or their relative merits; nor the manner of rearing the grape and manufacturing wines and brandies therefrom, all of which have hitherto been largely treated of in California, and books upon the subject are open to the study of any desiring information on the subject.

Perhaps it would not be out of place for your committee to mention in this report the fact that their attention has been called to an improved process of distilling brandy from the grape, discovered by Mr. ——— Johnson, of Coloma, whereby he has succeeded in separating the brandy almost entirely from the fusil oil, thus rendering it more palatable and wholesome, and greatly enhancing its value as an article of commerce.

Your committee respectfully submit the foregoing report, and beg leave to offer the following concurrent resolution, with a recommendation that it pass:

CONCURRENT RESOLUTION.

Whereas, The existing Internal Revenue Law of the United States is oppressive and unjust in its operation toward the fruit distilling interest of California, leading to arrest as a criminal, and working a confiscation

of the machinery and house and land whereon it is located, for the slightest technical violation of its stringent provisions, which are so conflicting as to be beyond the simple comprehension of the humble distiller; and, whereas, the law, by its system of rewards to informers and officials in cases of seizure and sale, acts practically as a bounty upon injustice and petty tyranny, inasmuch as the officer making the seizure is the interpreter of the law, and passes upon the legality of his own acts, from which there is no appeal, except at a ruinous expense and loss of time; and, whereas, the ruling now imposed by the Commissioner of Internal Revenue regarding a capacity and per diem tax is ruinous and inapplicable to the fruit distiller, and prevents the working of light and inferior wines into brandy, and if persisted in, will effectually destroy and close the fruit interest of California; therefore, be it

Resolved by the Senate, the Assembly concurring, that our Senators in Congress be instructed and our Representatives requested to lay the facts stated in the preceding preamble before that body, and use their utmost endeavors for the repeal of the said law, or such a modification of it as will exempt fruit distillers from its provisions, as applied to malt and grain distillers.

Resolved, That his Excellency Governor Haight be requested to furnish a copy of the foregoing resolution to each of our Senators and Representatives in Congress.

WILSON, Chairman.

BEET ROOT SUGAR.

DEVELOPMENT OF BEET ROOT SUGAR INDUSTRY.

This industry is exciting so much interest at this time, that we feel called upon to place before the agriculturists of the State all the information obtainable. We therefore make the following extracts from the Report of the United States Commissioner to the Paris Exposition on this subject. It will be found valuable and interesting. We would give the process of manufacture, but it could not be rendered intelligible without a large number of drawings for illustration. We are therefore compelled to omit this part of the report:

HISTORY OF THE CULTIVATION OF THE BEET FOR SUGAR.

The history of the manufacture of sugar from the beet is one of the most interesting and instructive in the annals of industrial arts. Although it comprises a period of little more than fifty years, its growth has been marked by rapid strides, and in many European countries the manufacture of sugar, which had hitherto been considered a monopoly of the tropics, is firmly established, and bids fair to become one of the most stable and productive industries. Founded by Napoleon a little more than half a century ago, it was subjected in its infancy to the evils of adverse and hostile legislation. Like other grand creations of that man of genius, however, it survived his downfall; for a long time apparently forgotten, yet still remaining, though in obscurity, in a corner of France, till called to fulfil the destiny for which it was created. At last, however, placed on a more secure footing, this manufacture has been carried on with constantly increasing production, at a constantly decreasing cost, till it has assumed its present proportions, and may be reckoned among the most important of European industries.

In seventeen hundred and forty-seven, Margraff, a Prussian chemist, read before the Academy of Berlin his memoir on the existence of a sugar in the beet identical with that in the cane. It was not, however, until fourteen years after this that this discovery found its first application. Achard, another chemist of Berlin, republished the discoveries of Margraff, and it is to his indefatigable industry and perseverance that we owe the first practical methods used in the manufacture of beet sugar.

From seventeen hundred and eighty-nine to seventeen hundred and ninety-six, Achard devoted himself to the culture of the beet and experiments in sugar making at his farm at Caulsdorff, near Berlin, at the end of which time, with the assistance of the Government, he founded at Kunern, in Silesia, a manufactory which proved to be successful, and was soon followed by the erection of two other similar establishments. This was the origin of the manufacture which is to-day represented by so many establishments in France and in various parts of Europe.

The results of the labors of Achard were published in seventeen hundred and ninety-seven. The *Annales de Chimie*, in seventeen hundred and ninety-nine, contained a letter from him, in which he described the processes used by him in the manufacture of beet sugar, and the cost of the manufactured article. In the same letter he also forcibly presented the advantages which would result to agriculture by the introduction of this new industry.

The political situation in Europe was at this time singularly favorable to the discoveries of Achard. France desired to be freed from the commercial monopoly of England, and to reduce the high price of sugar which the war with that power had caused.

Experience in France did not, however, confirm the brilliant results which had been announced. The Commission appointed by the Institute to inquire into this matter reported the cost of the new product at one franc eighty centimes, instead of sixty centimes, the price announced by Achard. Two manufactories which had been established near Paris suspended operations, and by their failure threw great discredit upon this industry, which has achieved its present success only after many years of patient and persistent endeavor.

In eighteen hundred and ten, the report of Mr. Deyeux, which was read before the Academy of Sciences, again called the attention of the public to the advantages which would result from the manufacture of beet sugar. Cane sugar had at this time reached an exorbitant price, being three francs per half kilogram, equal to about sixty cents per pound. The attention of the French Government was also called to this subject, and some specimens of sugar were presented to the Emperor Napoleon.

The feasibility of the manufacture of sugar from the beet having been established, there needed to be but a favorable opportunity to secure to France the possession of this industry.

By the decree of March twenty-fifth, eighteen hundred and eleven, the Emperor ordered that thirty-two thousand hectares of land should be devoted to the culture of the beet, and one million francs were placed at the disposal of the Minister of Interior for encouraging this industry. Instructions were sent to all the departments, and a new decree, under the date of January fifteenth, eighteen hundred and twelve, established five schools of chemistry, where the processes used in this manufacture were taught. Two million kilograms of raw sugar were also produced in the four imperial factories, from the harvest of eighteen hundred and twelve.

The manufacture was further encouraged by granting five hundred manufacturers' licenses, and by decreeing that all indigenous sugar should be exempt from taxation for four years.

The political crisis of eighteen hundred and fourteen was a terrible blow to this new industry, and caused the failure of all the manufacturers but one. In December of eighteen hundred and fourteen, however, under an impost of about three and one-third cents per pound, while that of foreign sugar was five cents per pound, the industry revived. New and more effective methods of manufacture were introduced, and sixty or seventy per cent. of juice was realized, instead of fifty or sixty per cent., the amount obtained by the older processes. The yield of sugar at this time was from three to four per cent., the yield of molasses five per cent., and the cost of manufacture about seven cents

per pound. From this time till eighteen hundred and thirty, the progress made was as rapid as it was great. In eighteen hundred and twenty-two the yield of sugar was about five per cent., and the cost of manufacture five and a half cents per pound. The amount produced at this time, in one hundred different establishments, was about five thousand tons.

The introduction of steam power had a marked effect upon this industry. In eighteen hundred and thirty-six the number of manufactories was one hundred and thirty-six. Since eighteen hundred and forty, though there has been a constant struggle between the cane growers of the French colonies and the beet growers of France, the amount of beet sugar produced in France has doubled every ten years.

In eighteen hundred and sixty-five and eighteen hundred and sixty-six, the production of beet sugar had reached two hundred and seventy-four millions of kilograms, an amount more than sufficient to supply home consumption without recourse to the French colonies.

In eighteen hundred and thirty the average annual consumption of sugar in France per each person was about two pounds, of which the beet sugar manufacture produced about nine per cent.

In eighteen hundred and sixty-five the average consumption was fourteen pounds per each person, the beet sugar manufacture supplying sufficient for that amount.

The rapid growth and development of this industry throughout Europe forms one of the most interesting spectacles of the present century, and the economic, social and industrial questions to which it has given rise, have attracted the attention and monopolized the labors of the leading minds of the countries in which it has been established. The beet has found its supporters and adherents in the cabinets of kings, the academies of science, in agricultural societies and farmers' clubs, in the machine shop, and in the peasants' cottage. No other industry of modern times has so successfully harmonized the agricultural and manufacturing interests which have heretofore been regarded as inimical to each other, or has originated and supported so many subservient and minor interests. The manufacture of sugar has been established and successfully carried on in Prussia, Austria, Russia, Holland, the Zollverein, Belgium, Poland and Sweden. The total amount of sugar produced in these countries, and in France, is six hundred and thirty thousand tons per annum. Except in the seaboard towns of France none other than beet sugar is used; the same is true also of Germany, none but beet sugar is consumed in Paris, Vienna, Berlin, Dresden, Leipsic or Munich.

The average yield of sugar for the past eight years has been over eight per cent., and of molasses about two and forty one-hundredths per cent.

The reduction of the price of sugar effected by means of the substitution of power for hand labor, and the introduction of new and useful machines and processes is illustrated by the following table,* showing the average prices, exclusive of duties, of number twelve raw sugar in Paris, from eighteen hundred and sixteen to eighteen hundred and sixty-five, inclusive, omitting the period from eighteen hundred and twenty-eight to eighteen hundred and fifty-four, during which time the price gradually fell:

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* *Vide* Beet-root Sugar and Cultivation of the Beet, by E. B. Grant, Boston, 1867, p. 19.

Table showing the gradual reduction of the price of beet sugar.

1816	12.5 cents.
1817	11.6 cents.
1818	12.1 cents.
1819	11.6 cents.
1820	10.8 cents.
1821	10.8 cents.
1822	7.8 cents.
1823	8.6 cents.
1824	10.3 cents.
1825	9.9 cents.
1826	10.3 cents.
1827	9.9 cents.
1828	9.9 cents.
1854	5.8 cents.
1855	6.0 cents.
1856	6.4 cents.
1857	7.6 cents.
1858	5.6 cents.
1859	6.1 cents.
1860	6.1 cents.
1861	5.9 cents.
1862	5.2 cents.
1863	5.2 cents.
1864	5.2 cents.
1865	5.0 cents.
1866	4.75 cents.

According to the same authority the total production of sugar in the world is not far from two millions eight hundred thousand tons, in the following proportions:

Total production of sugar from all sources.

Kind of sugar.	Percentage.	Amount.
		Tons.
Sugar cane	71.42	2,000,000
Beet	22.50	630,000
Palm	5.00	140,000
Maple	1.08	30,000
Totals	100.00	2,800,000

Thus it will be seen that the beet furnishes nearly one-quarter of the sugar produced in the world.

A recent French writer thus observes:*

* M. Dureau, Rapports du Jury International, Exposition Universelle de 1867, Vol. XI, p. 284.

"This industry has not failed to perform the promises of its youth, and has justified, by its rapid development, the most enthusiastic hopes of its founders. France, in the possession of the beet, has become the fortunate rival of the most flourishing sugar colonies, which she has not only surpassed by the progress made in manufacture, but also in production, which is not inferior in importance to that of the Island of Cuba."

The same author remarks that in the large increase in the consumption of sugar is to be seen a solution of the difficulties which have existed so long between the cane and the beet sugar manufacturer, and the eventual harmonizing of these discordant interests. This increase also betokens an advanced degree of comfort and a higher scale of living throughout the entire population.

Political economists recommend the liberal use of this article, and by so doing throw their influence on the side of the consumers, whose interest it is to effect the abolition or great dimunition of the imposts and duties at present in force, the proper adjustment of which presents so many difficulties to the statesman.

PRESENT CONDITION OF THE BEET SUGAR INDUSTRY.

Since the establishment of the beet sugar industry, in eighteen hundred and twelve, it has spread very rapidly over all continental Europe, and at the present time in most of those countries is placed on a permanent and secure footing. It is to be found in Austria, Russia, Prussia, Germany, Belgium and Holland, and its introduction into England is seriously discussed. This shows a remarkable change of feeling in that country in regard to this industry, for no other nation was so strongly opposed to the introduction of the manufacture of sugar into France as England, or contributed so much to defeat this object and bring this industry, then in its infancy, into ridicule.

It is proposed to give a brief account of the present condition of this industry in the different countries of Europe, and to enumerate some of the benefits which have resulted from its introduction.

We will commence with France, for in that country the manufacture of beet sugar is carried on more scientifically and successfully than in any other part of Europe.

France.

Although the discovery of the existence of a crystallizable sugar in the beet is due to Prussian invention and intellect, yet the successful application of the discovery is due to the genius and perseverance of French manufacturers, stimulated by the assistance and approval of the Government, and by that feeling of patriotic pride which finds its expression in the workshop as well as in the battalion. The varied fortunes which beset this new industry have been already noticed. It had spread since its foundation to many places in France, and in eighteen hundred and thirty-six was to be found in active operation in thirty-seven departments, the number of factories being four hundred and thirty-six, although the production did not exceed forty million kilograms. The law of eighteen hundred and thirty-seven, by which a duty of fifteen francs per one hundred kilograms was imposed upon indigenous sugar, caused sixty-six manufactories to suspend work, and

drove the cultivation of the beet from seventeen departments. It was with the utmost difficulty that this industry could be maintained in the northern departments, a country where agriculture flourished, labor was abundant and fuel cheap. Subsequently the improvements in agriculture, the establishment of canals and railroads, and the consequent decrease in the cost of transportation, caused this industry to be again established in many localities, although the north still remains the principal seat of this manufacture.

The following table from the report of M. Dureau, shows the number of factories in each department of France, and their production for the years eighteen hundred and sixty-six and eighteen hundred and sixty-seven :*

Production of beet sugar in France for the years eighteen hundred and sixty-six and eighteen hundred and sixty-seven.

Department.	No. of factories	Production in kilograms.
Aisne	80	39,172,464
Nord	160	77,922,287
Oise	32	16,813,646
Pas-de-Calais	76	35,446,974
Somme	55	24,731,431
Other departments	38	22,767,875
Total	441	216,854,677

"In the Department of the Aisne this industry is centered, particularly in the Arrondissement of St. Quentins Laon and Soissons. In the Department of the Nord, the Arrondissements of Valenciennes, Lille, Douai, and Cambria, contain the greatest number of manufactories, particularly the first two mentioned. In the Pas-de-Calais there are the factories of Arras and Béthune; in the Somme, those of Péronne and of Montdidier; in the Oise, those of Compiègne and Senlis. Although the amount of beet sugar manufactured has largely increased since eighteen hundred and thirty-seven, the number of factories is less, and but twenty-four departments, instead of thirty-seven, as then, enjoy the benefits of this industry. In the Department of the Nord alone can it be said that, with but few exceptions, this industry has attained all that can be attained. The manufactories are numerous throughout the whole department; each commune has three or four establishments, and in some places the smoke from the chimneys of sixteen or seventeen factories can be seen on the horizon."

The following abstract from an article published during the Exhibition shows in a striking manner the importance which this industry has attained in some of the districts of France.†

* Rapports du Jury International, Vol. XI, p. 287.
† Exposition Illustrée, Vol. II, p. 28.

"Official returns show that the Arrondissement of Valenciennes produced, from eighteen hundred and sixty-four to eighteen hundred and sixty-six, one hundred and fifty-one million ninety-six thousand six hundred and seventy kilograms of molasses, and from eighteen hundred and fifty-three to eighteen hundred and sixty-six, nine hundred and fifty-three thousand five hundred and twenty hectolitres of alcohol. During the same period the sugar factories consumed nearly six milliards of kilograms of beets, a large part of which was produced in the neighboring districts and sent here to be manufactured. The immense plantations of this arrondissement, which formerly sent the whole crop to the sugar factories, now send a large part of it to the distilleries, and the great factories and refineries are forced to call upon the neighboring arrondissements for the supply necessary to keep their works in operation. This, however, does not seem to have affected the manufacture of sugar, for the Arrondissement of Valenciennes has exported during the last eight years nearly fifteen millions of raw sugar.

"This district contains sixty-four factories, which furnish occupation during the winter season, when no other employment can be obtained, to seven thousand men, two thousand seven hundred and fifty women, and two thousand six hundred and seventy children of both sexes. The wages paid to these operatives for the one hundred and twenty days work, which is the length of the sugar-making season, amounts to three million two hundred and fifty thousand francs. It to this amount is added the sum of eight hundred thousand francs paid for agricultural labor, the sum of four million francs is reached, which is paid as wages in this industry annually. The sugar factories produce annually six million two hundred and sixty-one thousand kilograms of sugar, one million six hundred and twenty-one thousand seven hundred kilograms of molasses, and twenty-four million nine hundred and ninety thousand kilograms of pulp. They make use of numerous steam engines, whose aggregate power amounts to one thousand horses. Finally, this industry has, during the last ten years, paid for local taxes the sum of eighty thousand francs, while all the other industries of the arrondissement combined have contributed less than ninety thousand francs."

In those departments into which the cultivation of the beet and the manufacture of sugar have been lately introduced, the newest processes and best machinery are to be seen. The size and productive power of the factories have generally been increased, and the average production, which in eighteen hundred and thirty-six was ninety thousand kilograms per each factory, at the present time has reached as high as five hundred thousand kilograms, and in some cases, that of the largest establishments, one million five hundred thousand kilograms. The amount of sugar usually extracted is from five and sixty one-hundredths to six per cent. An establishment, therefore, producing one million five hundred thousand kilograms of sugar, would work up from twenty-five thousand to thirty thousand tons of beets, which, basing the production at forty kilograms per hectare, would require from six hundred and fifty to seven hundred and fifty hectares under cultivation. The average amount of land under cultivation for each factory is from two hundred and fifty to three hundred hectares, which is as much as can be economically worked, owing to the difficulty of transporting the beets to the factory.

The aggregate amount of steam power employed in this industry is eighty-eight thousand horses, estimating a two-hundred horse power engine to each factory.

The amount of land under beet cultivation in France, at the present time, is estimated to be one hundred and ten thousand hectares. In eighteen hundred and fifty-seven, ten years ago, it was only fifty-two thousand hectares.

The price of raw sugar at the present time in France is from sixty-one to seventy francs per one hundred kilograms. To this must be added the duty, which, on beet root sugar is forty-two francs per one hundred kilograms, and on French colonial sugar, thirty-seven and a half francs. After being refined, this sugar sells for one hundred and twenty-five to one hundred francs per one hundred kilograms, which includes the duty. The production of beet root sugar in France is over two hundred million kilograms. About the same amount is imported. The consumption is two hundred and fifty million kilograms, and the difference is exported, in the form of refined sugar, to England, Switzerland, America, Algiers, and other countries.

It will be seen that France nearly supplies her own consumption of sugar, although (as has before been shown) that consumption has increased steadily every year.

Germany.

The development of this industry in Germany has been as remarkable as in France, and its progress has been marked with the same success.

While under the direction of the founder, Achard, who was assisted by Government patronage, it was represented by two or three establishments, and subsisted until eighteen hundred and fourteen. From that time till eighteen hundred and thirty, there was very little or no sugar manufactured in Germany. In eighteen hundred and thirty, measures were taken to establish this industry, for its development in France proved that the manufacture of sugar could be profitably carried on in Europe.

Since the establishment of the Zollverein, this manufacture has been greatly extended, but within the last eight years, particularly, it has increased to such an extent as to completely drive foreign sugar from the market. The factories are unequally distributed among the different countries of the confederation. The greatest number is to be found in Prussia, and particularly in Silesia and Saxony, the soil of which is admirably adapted to the cultivation of the beet. The increase of the number of factories in Prussia is very marked. In eighteen hundred and forty, there were only one hundred and two establishments; in eighteen hundred and sixty-five, two hundred and thirty-four.

In the Zollverein, as in France, the average amount of sugar produced by each factory has largely increased within the last twenty years, and the German manufacturers are enabled not only to work up more beets per day than formerly, but to extract a much larger percentage of sugar, the average being from five to eight per cent.

This large average yield of sugar, which is so much larger than it is in France, is one of the results of the different systems of agriculture pursued in Germany, which system, in its turn, is due to the manner in which the tax on the production of sugar is collected. In France the duty is collected on the amount of sugar produced, and amounts to nearly forty-four francs per every hundred kilograms. In some instances, however, the duty is collected on the juice, with the understanding that if more sugar is produced than estimated, it shall also be liable to the tax. In other words, the duty is collected on the manufactured article.

In the Zollverein a different system exists. The tax is levied on the

beet before it is rasped, at the rate of one and eighty-seven one-hundredths francs per each hundred kilograms of roots. When the yield of sugar is eight per cent., this amounts to a tax of twenty-three and forty-three one-hundredths francs for every one hundred kilograms of the manufactured article. If the German manufacturer can extract more than eight per cent. of sugar from the beet, this increase is not taxed. With this system it is easily seen that it is the interest of the manufacturer to have only those beets produced which contain the greatest amount of sugar. It is the custom, also, to cut off from the root, before it passes into the rasp, all those parts, such as the neck, which contain the smallest amount of sugar, and in which the salts and nitrogenous matters are more abundant. Such a system as this does not tend to encourage the agriculture of the country. The manufacturers, in many cases, insist that certain manures shall not be used on the land at all, and the land is never manured previous to raising a crop of beets. The production per hectare is consequently very much less than it is in France, the average being only from twenty thousand to twenty-five thousand kilograms. Beets raised in this manner contain, it is true, much more sugar, but produce a smaller amount of waste pulp, which is used in other countries to so great an extent for fodder and manure. In the Zollverein, the beet is cultivated for its sugar alone, the object being to produce the greatest amount of sugar by raising beets of the maximum sweetness. In France, on the other hand, the beet industry is thoroughly agricultural, and has for its object, not only the production of sugar, but also the improvement and fertilization of the soil; and upon the successful cultivation of this plant the agriculture of many districts depend.

The States of the Zollverein have quadrupled their production during the last fifteen years—one hundred and eighty thousand tons of sugar having been produced in eighteen hundred and sixty-five and eighteen hundred and sixty-six, against fifty-two thousand five hundred and eighty-six tons in eighteen hundred and fifty.

The quantity of imported sugar has fallen during the same time from fifty-two thousand five hundred and sixty-eight tons to twelve thousand five hundred and sixty-two, showing that the foreign article has been nearly driven from the market.

In eighteen hundred and sixty five and eighteen hundred and sixty-six there were thirty new establishments built and many old ones enlarged. The average yield of sugar is eight per cent.; of molasses, two and forty one-hundredths per cent. This includes the returns from poorly managed factories and those worked under the old processes. The sugar production of the Zollverein is at the present time one hundred and ninety million kilograms. Much of the sugar is obtained from the infusion of dried beet—the beets being sliced and dried, and sent in this condition to the manufactory. As an illustration of the proportions which a manufactory may assume when conducted under this system, we may cite the establishment at Waghäusel, near Carlsruhe, in the Duchy of Baden, in which three thousand people are employed, a capital of eighty million francs (sixteen million dollars) invested, and twelve acres of land covered with buildings.

The consumption of sugar in the Zollverein, for the year eighteen hundred and sixty-seven, was one hundred and sixty thousand tons.

Austria.

The beneficial results produced by the introduction of this new industry into Austria are shown by the fact that the amount of sugar con-

sumed by each person has largely increased; that the manufacture supplies entirely the home market; that large quantities of sugar are annually exported, while at the same time the tax on the beets used in this manufacture is the source of a large revenue to the State.

The following information in regard to the introduction and development of the manufacture of beet sugar in Austria was communicated to the Department of State by Mr. P. Sidney Post, United States Consul at Vienna:*

"There is no industry of Austria which ought to interest the United States so much as the production of sugar from the beet root. The United States appears to be in every respect as well, and in many respects much better, adapted for its production than this country.

"Beets containing a large amount of saccharine matter can be abundantly and cheaply raised in all the Northern States, and especially in the northwest; and if the great profit of converting them into sugar was fully understood, there would be plenty of capital for the supply of the necessary machinery.

"The machinery is expensive, and it requires a large amount of capital to commence operations, but it is doubtful whether there is any branch of industry which would so well repay capital and enterprise. The business cannot well be conducted on a small scale, and this disadvantage has, doubtless, hitherto prevented its being generally adopted in the United States. But when it shall have been given a fair trial it must become a very important interest.

"The growth of the manufacture of sugar is as wonderful as the history of the legislation on this subject in Europe is interesting. The embargo of Napoleon, which forced on France the production of sugar, proved to Austria how beneficial the industry would be to this empire; but the first factories were not built until eighteen hundred and thirty.

"In eighteen hundred and thirty there were two factories; in eighteen hundred and fifty-one, one hundred; in eighteen hundred and sixty-one, one hundred and twenty-five; in eighteen hundred and sixty-two, one hundred and thirty; in eighteen hundred and sixty-four, one hundred and thirty-six; in eighteen hundred and sixty-six, one hundred and forty.

"There is a tax levied upon the beets before they are manufactured into sugar, and by this means the exact quantity consumed is known.

Quantity of beets converted into sugar during the years named.

Year.	Cwt.
1851	5,411,770
1853	6,387,319
1855	7,989,390
1857	11,892,941
1858	15,681,114
1859	21,017,574
1860	18,511,909
1861	17,682,594

* *Vide* report on commercial relations, etc., for 1867, page 510.

Year.	Cwt.
1862	17,112,066
1863	21,080,121
1864	18,288,911
1865	24,197,127
1866	21,081,368

"The decrease of eighteen hundred and sixty-two and eighteen hundred and sixty-four is explained by bad harvests; that of eighteen hundred and sixty and eighteen hundred and sixty-six was occasioned by the wars progressing in those years.

"In eighteen hundred and sixty-six the one hundred and forty sugar manufactories used—machines for cutting beets, two hundred and twenty-three; cylinders for maceration, forty-four; juice centrifugals, eighty-two; juice presses, nine hundred and sixty-six; refining kettles, etc., seven hundred and fifty-seven; evaporation apparatus, two hundred and sixty-seven; pans, one hundred and seventy-five; spodumene filters, one thousand five hundred and sixty-seven.

"During the last sugar campaign there were consumed:

Coal, cwt.	10,664,614
Coke, cwt.	64,235
Peat, cwt.	1,123
Wood, cords	6,041
Spodumene for filtering, cwt.	678,290

"During the campaign and part of the time during the rest of the year there were employed in the sugar manufactories twenty-five thousand and twenty-seven males and fourteen thousand four hundred and seventy-eight females. The daily wages of the laborers vary from twenty kreutzers to one florin per day, and there were paid during the year over three million five hundred thousand florins on account of wages. While in eighteen hundred and fifty-one but five per cent. of sugar was obtained from beets, in eighteen hundred and sixty-one, by the improvement in machinery, the manufacturers were enabled to obtain six and a half per cent., and in eighteen hundred and sixty-six they succeeded in obtaining seven and a half per cent. The pure sugar obtained from these beets equalled, in eighteen hundred and fifty-one, twenty-seven million fifty-eight thousand eight hundred and fifty pounds; in eighteen hundred and sixty-one, one hundred and fifteen million fifty-nine thousand six hundred and thirty-six pounds; in eighteen hundred and sixty-six, one hundred and fifty-eight million one hundred and nine thousand eight hundred and eighty-seven pounds. At an average value of thirty florins per centner, the amount realized from the last campaign equals thirty-six million four hundred and seven thousand florins; or, if we take the Austrian florin at its present value, and reduce the quantity to American measures, the sugar will be worth nine dollars and seventy-five cents in gold per hundred weight, and the whole yield will be worth, in gold,

fourteen million five hundred and sixty-two thousand eight hundred dollars.

"The Government tax upon the beet is forty and nine-tenths kreutzers per centner of fresh beets and two florins (twenty-five and a half kreutzer) per centner for dried ones. The Government tax on beet amounted—

Year.	Florins.
In 1850	153,337
In 1861	5,659,202
In 1862	5,587,838
In 1863	6,989,838
In 1864	6,030,097
In 1865	7,926,202
In 1866	6,116,589

"By this increased manufacture the commercial proportions between the exports and imports of this article have been entirely changed, as is shown by the following tables:

*Imports and exports of sugar into and from Vienna, in centners.**

Year.	Refined.	Powdered.	Molasses.
Imports.			
1830	2,213	400,039	583
1840	5,280	529,600	661
1850	35,005	645,608	92
1855	35,028	770,981	142
1860	4,656	36,410	27,004
1861	9,951	31,716	35,710
1862	31,280	131,692	31,762
1863	13,418	23,845	27,752
1864	3,940	3,841	31,662
1865	2,380	526	29,180
1866	1,848	422	20,612
Exports.			
1850	267	7	.....
1853	18	.....	.....
1858	30	8	.....
1860	10,757	1,359	.....
1861	155	1,820	.....
1862	.....	587	.....
1863	.....	736	.....
1864	47,673	39,245	.....
1865	110,812	363,144	.....
1866	183,631	34,056	.....

* A centner nearly equals 123½ pounds.

"During the first six months of eighteen hundred and sixty-seven, nearly seven hundred thousand centners were exported. Thus it may be seen that thirty-six years ago all the sugar used in the empire was imported. Now the importation of sugar has ceased, and it has become an article of export and is no inconsiderable item in the balance of trade.

"The duty on the importation of sugar was reduced in eighteen hundred and fifty-five and in eighteen hundred and sixty-two, and the interruption in the steady decrease of the import and increase of the export is owing to this cause.

"The heavy tax on the beet before conversion into sugar operates as a tax on the sugar. When sugar became an article of export there was a certain recompensation fixed, which in eighteen hundred and sixty equalled five florins sixteen kreutzers per centner on refined sugar, and four florins twenty kreutzers on powdered sugar. In eighteen hundred and sixty-four this recompensation was realized to six florins fifty-one kreutzers per centner on refined sugar, and to five florins thirty kreutzers per centner on powdered sugar.

"The continued import of molasses is explained by the fact that the molasses obtained from the beet is not fit for common use, but is used for producing spirits.

"Comparing the income from customs duty, and the tax on the production of sugar, we find not only that the proportion between the export and import has changed, but that there is a considerable increase in consumption at home. Giving the income in round numbers we have:

Revenues from the manufactures of beet root sugar.

Year.	From customs duties on imports.	From Internal Revenue tax.
	Austrian florins.	Austrian florins.
1850	5,300,000	150,000
1852	5,900,000	500,000
1855	6,600,000	1,100,000
1858	3,600,000	4,100,000
1860	400,000	5,100,000
1861	400,000	5,800,000
1862	1,409,000	5,600,000
1863	800,000	7,000,000
1864	200,000	6,000,000
1865	100,000	7,900,000
1866	100,000	6,100,000

"Notwithstanding the diminished customs duty on sugar, by the increase of the amount realized from the internal revenue sugar tax, the total result has grown larger, thereby showing that the domestic consumption must have been increased.

"The expense of the manufacture of sugar during the last year was:

	Austrian florins.
Cost of beets	3,414,000
Cost of manufactured sugar	2,582,000
Cost of manufactured molasses	72,700
Cost of spodumene	3,844,600
Cost of coal	2,601,100
Cost of wood	53,600
Cost of peat	10,800
Cost of coke	1,200
Cost of wages	3,500,000
Tax	6,116,600
Total expenses	22,196,600
Value of the sugar produced	36,407,000
For interest, profit, etc	14,210,400

"Thirty-nine and three-tenths per cent. of the entire income, therefore, remains for interest on the capital and profits of the business."

The following observations are extracted from a later and unpublished dispatch from Mr. Post, now in the archives of the State Department, and supplied for this report:

"The production and export of beet root sugar is increasing, and the history of its increase is best shown by the following table:

Table showing the quantity of beets taxed and used during the last three years in Austria.

Season of—	Number of factories in operation	Quantity of beets taxed	Amount of tax collected*	Average quantity of beets used by one factory in the three years	Average amount of taxes paid by one factory during the three years.*	
		Vienna cwt.	Florins.	Vienna cwt.	Fl.	Kr.
1864-65	143	18,040,561	7,387,609	125,916	51,562	60
1865-66	138	15,612,209	6,393,199			
1866-67	138	19,105,874	7,823,855			

*40 95-100 kr. per Vienna centner.

Beet root sugar manufactories in Austria and other countries, and their products.

Country.	Season.	Number of manufactories.....	Quantity of beets taxed.	Quantity of raw sugar produced.	Quantity of sugar exported.
Austria.....	1864–65.....	143	18,040,561 Vie. cwt.	*1,344,136 cus. cwt.	.....
Austria..	1865–66.....	138	15,612,209 Vie. cwt.	.....	506,074 cus. cwt.
Austria.....	1866–67.....	138	19,105,874 Vie. cwt.	.....	806,742 cus. cwt.
Austria.....	1868.....	166	.....	.....	.....
Zollverein.....	1864–65.....	.....	40,902,891 cus. cwt.	3,413,214 cus. cwt...	*373,285 cus. cwt.
Zollverein.....	1865–66.....	.....	42,859,064 cus. cwt.	3,713,912 cus. cwt...	.....
Zollverein.....	1866–67.....	.....	50,012,553 cus. cwt.	3,900,000 cus. cwt...	.....
Zollverein.....	1868.....	300	.....	.....	.....
Belgium.....	1864–65.....	.....	.....	437,896 cus. cwt...	.....
Belgium.....	1865–66.....	.....	.....	831,037 cus. cwt...	.....
Belgium.....	1866–67.....	.....	.....	782,460 cus. cwt...	.....
Belgium.....	1867–68.....	111	.....	800,000 cus. cwt...	.....
Holland	1865.....	.....	.....	70,000 kilos.....	.....
Holland	1867.....	.....	.....	5,790,000 kilos.....	.....
Holland	1868.....	18	.....	.....	.....
Russia.....	1864–65.....	.....	.....	3,326,141 poods.....	.....
Russia...	1865–66.....	.....	.....	3,552,000 poods.....	.....
Russia.....	1866–67.....	.....	.....	5,280,000 poods.....	.....
Russia.....	1868.....	283	.....	.....	.....

*Average for the three seasons, 1864–65, 1865–66 and 1866–67.

Production, consumption, export and import of sugar in Austria from 1834–35 *to* 1867.

For the season of	Average quantity of beets taxed per year*.....	Amount of raw sugar produced per year*.....	Average import of colonial sugar per year*.....	Sugar exported p. year*.....	Population	Amount of sugar consumed per person†.....	Average price of loaf sugar‡.....	Average number of factories in operation.....
1834–1839.....	605,616	30,270	518,193	38	36,000,000	1.52	44.25	37.2
1839–1844.....	1,577,995	78,875	574,470	89	35,444,400	1.42	38.00	42.6
1844–1849.....	1,729,280	103,757	568,955	150	37,160,400	1.81	38.00	59.4
1849–1854.. ..	5,196,896	311,814	787,478	324	36,451,600	3.01	39.20	97.6
1854–1859.....	11,712,692	820,080	581,489	88	36,714,600	3.00	41.90	119.2
1859–1864.....	17,798,429	1,246,090	71,125	21,058	36,917,200	3.51	39.50	135.2
1864–1867.....	19,201,861	1,344,136	2,115	506,074	35,650,000	2.36	30.32	139.4

*Custom cwt. †Custom pound. ‡Florins.

Russia and Holland.

The present production of sugar in Russia, including Poland, is from one hundred and fifteen to one hundred and twenty millions of kilograms annually.

This country is destined to become one of the most important sugar-producing countries in Europe. The soil, which is a rich, dark loam, produces excellent beets without manure, and is acknowledged to be the best for this purpose in Europe. The number of kilograms of beets per acre is generally very small (twenty thousand), but the richness of the beet is remarkable, nine and frequently ten per cent. of sugar being obtained. The number of factories in Russia at the present time is four hundred and forty, most of them, however, being of small size.

In Holland, into which the beet has been recently introduced, the cultivation and manufacture appear in the most flourishing condition. This is owing to the fertility of the soil, in which the beet grows to its full size, and retains at the same time its full saccharine properties.

The present production of sugar in Holland is about seventy-five thousand kilograms. The number of manufactories is ten.

United States.

Attempts have been made at different times in this country to establish the manufacture of beet root sugar, with, however, but moderate success. All of these attempts have, with but one exception, been on a small scale, while the industry was still in its infancy, and the prices of foreign sugar were much lower than they are now, or are likely to be again.

In eighteen hundred and thirty-eight and eighteen hundred and thirty-nine, the "Northampton Beet Sugar Company," of Northampton, Massachusetts, made several hundred pounds of this sugar, and succeeded in raising beets of excellent quality and weight, but the enterprise did not prove financially successful. The most complete published account of this attempt is that given by Mr. David Lee Child.*

This enterprise is also referred to by Mr. E. B. Grant. Of the more recent endeavors he thus speaks:†

"In eighteen hundred and sixty-three and eighteen hundred and sixty-four, the brothers Gennert, of New York, conceived the idea of manufacturing beet sugar. Mr. Thomas Gennert visited Europe for the purpose of studying the methods there employed. Upon his return, the firm selected the prairie lands in the Town of Chatsworth, Livingston County, Illinois, purchased twenty-three hundred acres, erected buildings, and commenced the cultivation of beets. In process of time they gathered their crop, which, owing to the drought, and also to the unfavorable method of planting, yielded only ten or twelve tons to the acre. The beets were of excellent saccharine properties, containing twelve and a-half per cent. of sugar. The heavy outlay required exhausted their means; or, to use their own words: 'We started on too large a scale for our purse, which gave out too soon before the machinery required for successful working was finished; but experience has shown us sufficiently that sugar enough is contained in the beets, and that it can be got out. With our imperfect, or rather incomplete machinery, we extracted seven per cent. in melada. Those beets would average, with complete machinery, nine per cent.'

"The Messrs. Gennert have put their property into a stock company,

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* The culture of the beet and manufacture of beet sugar, 1840.

† Beet-root sugar and cultivation of the beet, by E. B. Grant. Boston, 1867.

called the 'Germania Sugar Company,' and have six hundred acres of land in cultivation with beets this season."

The following is their estimate of the profits of working one hundred tons of beets per day, according to the yield of sugar, and with a capital of two hundred thousand dollars:

At 6 per cent	73 per cent. profit.
At 7 per cent	91 per cent. profit.
At 8 per cent	109 per cent. profit.
At 9 per cent	127 per cent. profit.

In referring to this same enterprise, the Commissioner of Agriculture says as follows:*

"A promising beginning of beet sugar making has been commenced at Chatsworth, Illinois, and fine samples of the sugar may be seen in the museum of this department. It has, of course, met with difficulties, surrounded by new circumstances, with high rates of labor, and interest on money, which will all, I have no doubt, be eventually overcome. Many individuals and companies stand ready to engage in the business when its success upon our soil is fully demonstrated. Then in the West, as in Europe, flourishing villages will spring up upon prairies that are now without population or improvements; and an impetus will be given to all other business by the successful manufacture of a raw product taken from adjacent fields, involving the supply of an imperative want of every class of our people."

The testimony of the best authorities on this subject, and the attempts themselves, prove that the beet may be grown successfully on our soil, and that when capital and enterprise are brought to the aid of this industry, success in sugar making will be assured beyond doubt.

NEW PROCESSES AND MACHINERY.

Before giving a detailed account of the machinery and apparatus used in the manufacture of beet root sugar, it has been thought advisable to briefly enumerate the processes, and report the machinery employed at the present time. This notice is condensed from an article by Mr. Basset, published in *Études sur l'Exposition.*

The manufacture of beet sugar, cane sugar, and any sugar extracted from a vegetable juice or sap containing saccharine matter, depends upon the following operations:

First—The extraction of the sweet juice from the plant or part of the plant which contains it.

Second—This juice, which is never pure enough to produce good crystallizable sugar by simple evaporation, must be purified.

Third—The juice must then be concentrated, in order to allow crystallization to take place.

*Preliminary Report of the Commissioner of Agriculture for the year 1867, p. 10.

Fourth—It must then be crystallized.
Fifth—The crystals must then be purified.
Sixth—The sugar must then be refined.

The following are the principal methods used in the manufacture of beet sugar at the present time:

The beet from which the juice is to be extracted must be first cut up. The beets are sometimes cooked previous to this operation, but the more common way is to use them raw. For this operation, cutters are used which cut the beets into ribbons or slices, or the root is submitted to the action of a rasp, and a pulp of the proper degree of fineness obtained. The last method is the one generally used.

The pulp is then submitted to pressure, an operation which is performed in various ways. The more common way is to put the pulp into sacks of a coarse woollen material, which are piled in layers upon a frame, each layer being separated by a plate of iron, perforated with holes, or by a grating of the same material, with narrow spaces between the bars. These sacks are then submitted to pressure, which is done by an ordinary screw press, or by an hydraulic press, or by both. The sacks, after being used, are washed and soaked in a weak solution of tannin.

The pressure, no matter how effectively performed, fails to extract more than seventy-five or eighty per cent. of the juice. As the beet contains ninety-eight per cent. of water, sugar and soluble matter, and only two per cent. of residuum, there is a loss by this process of from eighteen to twenty per cent. of juice. To prevent this loss, the extraction of the juice by maceration, or the use of water instead of pressure, has been attempted. Various machines and processes have been used, generally with excellent success, but this method has not as yet superseded the more common method of pressure.

The name given to the process of purification of the juice is defecation. The object is to remove, as far as possible, the foreign matters remaining in the juice after pressure. These are principally nitrogenous matter, mineral substances, coloring matter, and the coagulable albumen. The coagulable albumen is removed by the action of heat, which causes it to become insoluble. To remove the other matters, lime is added. These form, with the lime, insoluble compounds which are easily eliminated, but as an excess of lime combines with the sugar and forms saccharate of lime, which causes a loss of sugar by its becoming dissolved, and as this saccharate is injurious to the manufacture of good sugar, being one of the most active causes of discoloration in cooking, and its presence producing *sucre gras*, it is necessary to eliminate this excess of lime. This was formerly done by passing the juice through animal charcoal. M. Bassett* observes that he is ignorant what have been the motives which have induced manufacturers to make use of this operation, and remarks that the animal charcoal has no effect on the lime; that it does not act upon the saccharine alkalies; and that its decolorizing power—the only one it possesses—is of no value when the liquid is not free from the ulterior causes of the color, *i. e.*, the alkaline bases. The use of lime in large quantities for the purpose of eliminating the foreign matters

* Etudes sur l'Exposition de 1867, 3°Fascicule, 30 juin 1867.

contained in the juice has therefore been proposed. A solution of saccharate of lime is thereby obtained, which is cleared of the lime by passing a current of carbonic acid gas, obtained by the combustion of coal, through it. This is in principle the process which is known to-day under the name of carbonation. The carbonic acid acts upon the lime, but has no permanent effect upon the alkalies. It is true that the saccharate alkalies are decomposed by the carbonic acid, but as the alkaline carbonates are not removed, the saccharates are again brought together by the heat, and are an active cause of coloring and loss. M. Basset recommends the use of super-phosphate of lime in defecation, it being a cheap substitute and a more effective agent than carbonic acid, eliminating the lime, and at the same time destroying the effect of the alkaline salts which the juice contains. By some manufacturers, sulphate of alumina is used to eliminate the lime. This, also, is an effective agent, and prevents coloring, but by its use deposits are left in the juice which are difficult to remove, and a sulphate of lime is produced, which must be removed by filtering at twenty-six or twenty-eight degree Beaumé.

The different processes used in purifying the juice are briefly described by Basset, as follows:*

Ordinary Process.

Elevation of the juice to the temperature of seventy-five or eighty degrees centigrade; introduction and mixture of milk of lime; elevation of the temperature to the boiling point; time to allow the liquid to settle; decantation of the clear juice; pressure of the foam and insoluble deposits; filtration of the juice through animal charcoal.

Barnuel Process.

This is the same as the above, with the following modifications: An excess of lime is introduced so as to turn the sugar into saccharate of lime. The liquid is then decanted and submitted to a current of carbonic acid. The juice is then allowed to settle, and filtered as above described.

The sulphate of alumni process has been before referred to.

Double Carbonation.

This is similar to Barnuel's process, with this exception, that after the first action of the carbonic acid a new quantity of lime is introduced, and the juice is again subjected to the carbonic acid. Decantation and filtration as above described.

Troubled Defecation.

Elevation of the juice to the temperature of seventy-five or eighty degrees centigrade; introduction of lime; then, without decantation, the introduction of carbonic acid. Decantation, pressure of the deposits, and filtration of the juice through animal charcoal, as before described.

Concentration.

The purified, filtered and decolorized juice is concentrated by the action of heat, which causes it to lose its excess of water, and brings it

* Etudes sur l'Exposition de 1867.

gradually to the density necessary for crystalization. This operation is divided into two parts; concentration, properly so called, and cooking or baking. It is well known that the boiling point of a liquid in a vacuum is at very much lower temperature than it was when exposed to atmospheric pressure. Upon this principle the application of the vacuum in concentrating and cooking the juice rests.

The introduction of vacuum boilers is almost the only improvement, in reality, which has been made in the manufacture of sugar for thirty years, for the elements of all the other improvements which have been made were contained in the old processes. With the apparatus now used, it is impossible to caramelize the syrup, and the cooking or baking may be pushed to crystalization—an operation which is called baking in grains, and which is described at length in the accompanying report; finally, the heat is not sufficient to cause the saccharate alkalies, which have been left in the juice, to produce any reaction of importance. The machines for concentration which have produced the best result are manufactured by MM. Cail & Co., and are known as machines of triple effect.

Crystalization.

This is usually done in vats. The syrup is exposed to a temperature of from thirty to thirty-five degrees centigrade, which is maintained as uniform as possible till the crystalization is complete.

The turbine, by means of which the syrup is separated from the crystalized sugar, is a great improvement over the ordinary and older methods. By the use of this machine the purification of the crystals of sugar is reduced to an almost instantaneous mechanical operation.

The other operations and processes connected with the manufacture of sugar, some of which are recent and some of older date, will be described at length in the accompanying report. At the present time the machinery for a complete and well arranged sugar factory consists of washing machines, rasps, presses—mechanical and hydraulic, boilers of defecation, carbonic acid boilers, carbonic acid generators, foam presses, animal charcoal filters, machines for concentrating and cooking the sugar, crystalizing vats, turbines and furnaces for revivifying the animal charcoal. To this must be added the engines and generators, the size and cost of which depend necessarily upon the extent of the factory.

Of the improvements which have been made of late years in the methods and processes of manufacturing sugar, M. Constant Say makes the following observations:

"Since eighteen hundred and fifty-seven, the manufacture and refining of sugar has made great progress, the result of which is the production of sugar at a lower cost than formerly. The principal improvements in the manufacture are in the process of double carbonation, the apparatus of triple effect, of roasting *in vacuo*, and the use of centrifugal machines."

The Diffusion Process.

Mr. Post, Consul of the United States at Vienna, Austria, writes as follows concerning the new diffusion process:

"The new process recently invented by Mr. Julius Robert, a sugar manufacturer of Seelowitz, Austria, is working a complete change in the

manufactories here, and will doubtless exert a great influence on an extended introduction into the United States, and it is adapted to extracting the crystaline sugar from either sugar cane or beet root.

"Without entering into an extended description of this invention, I may say that the process differs radically from the old methods, their leading principle being to obtain the juice contained in the cane or beet root, and to this end they employed repeated grinding, or maceration, or powerful pressure.

"Mr. Roberts' 'diffusion process' does not aim at obtaining the juice contained in the cells of the cane or beet root, but to extract only the crystalizable sugar contained in that juice, and to leave whatever else it contains in the cells. To accomplish this purpose, the sugar cane or beet roots are cut into small slices and put into a number of vats, which are connected by pipes running from the bottom of one vat to the top of the next succeeding. Water of a certain temperature, and of a quantity proportioned to the weight of the cane or beet root in the vats, is mixed with the material in the first vat, and allowed to remain until it takes up a portion of the saccharine matter, or, so to speak, until the sugar in the vat is equalized between the water and the cane or beet root. That is to say, if the beet root contains eight per cent. of saccharine matter, the water will take up four per cent. This water is then forced by hydraulic pressure into the second vat, filled with beets.

"It already contains four per cent. of sugar; but the beets having eight per cent., it will again equalize itself, and when forced into the third vat will contain six per cent. of saccharine matter. In this way the water becomes more and more impregnated with saccharine matter, until it contains almost as much as the beet itself. To return to the first vat, we find that the first application of water extracted one-half, or four per cent. of the sugar. When this water was forced into the second vat the fresh water which forced it out and supplied its place extracted two per cent. more before the saccharine matter became equalized between the water and the beets. This water is then forced into the second vat, and the fresh water which supplies its place finds the beets containing but two per cent. of saccharine matter, and the next filling finds but one per cent., and in this way the sugar is extracted to within one-half of one per cent.

"It is said that by this process the raw material is much purer than when extracted by any other method—that from the same beets one-half per cent. more crystalline sugar is obtained than by the applicaton of pressure. The expenses for cloth, and the cleaning and renewing it, are entirely done away with; the expenses for motive power and machinery is considerably reduced, and the expense of manual labor is much less. requiring but one-quarter of the number of laborers necessary for the pressing purpose.

"In the United States, where labor is so expensive, this innovation must prove of incalculable importance. The only thing required in this new process not necessary in the old is an additional supply of water, an article tolerably plenty and cheap wherever this manufacture is likely to be introduced in our country.

"That this process is really the great improvement claimed no longer admits of dispute. Mr. Roberts has thoroughly tested it in his factory, and has adopted it, as have also six other factories, two in Austria, two in Prussia, one in Russia, and one in Bavaria."

CULTIVATION AND PRESERVATION OF THE BEET.

VARIETIES OF THE BEET.

The beet, which is a native of Turkey, is a half-hardy biennial plant. Its roots attain their full size during the first year. The seeds are produced from transplanted roots, after which the plant dies.

According to an analysis of the beet by Professor Payen, it contains—

	Per cent.
Water	83.5
Sugar in solution	10.5
Cellulose and pectose	.8
Albumen, caseine, and nitrogenous matters	1.5
Malic acid; pectine; gummy substances; fatty, aromatic and coloring matters; phosphate of lime; phosphate of magnesia; silicate, nitrate, sulphate, and oxalate of potash, etc	3.7
	100.0

Among the many varieties of the beet the following may be enumerated as best adapted for agricultural and manufacturing purposes: The long red mangel-wurzel, the German red mangel-wurzel, the long white green-top mangel-wurzel, the long white red-top mangel-wurzel, the yellow globe mangel-wurzel, the Imperial, the Magdeburg, and the white sugar or white Silesian. The white or sweet turnip variety is the most desirable for general cultivation. Of this variety there are two kinds, viz: the white beet root with a rosy collar, which contains the largest amount of sugar; and the Silesian, a white beet root, with a green collar, containing less sugar. The roots of the Silesian variety grow almost entirely below the surface of the ground, and owing to their compact and firm texture, resist both frosts and spontaneous alterations better than any other variety.

Those who are not only distillers, but who are at the same time growers of the beet root, and who endeavor to obtain not only an abundant crop of saccharine matter, but also a large crop in weight of roots per acre, may advantageously raise beets which yield even less sugar than the Silesian variety, and which contain extraneous substances prejudicial in the manufacture of sugar, but not in the distillation of alcohol. Among these varieties may be named the yellow beet of Germany, an oblong root with a yellow pulp, the beet with a pale yellow skin and white pulp, only slightly elongated—a variety which has been found in some countries nearly as rich in sugar as the sweet turnip. It is customary in Europe for sugar factories and distilleries to supply the growers with seed, at the same time contracting for the crop when grown. The French factories generally furnish the Silesian beet root seed.

To maintain the quality of the beet unimpaired it is necessary from time to time to renew the seeds, and select them with care. The sim-

plest means which can be employed for this purpose is a salt bath, into which the beets are plunged, and their density ascertained. The sweetest beets sink to the bottom, and are preserved for seed. By careful selection in this way M. Villenorman has obtained plants which contain fourteen or fifteen per cent. of sugar. The richness in sugar is ordinarily in inverse ratio to the size of the beet, and in direct ratio to the density.

Grant considers the white Silesian variety to unite most of the desirable qualities for manufacturers. He says: "For the use of sugar manufacturers the kind of beet that can be cultivated with the most advantage is that which is richest in sugar and contains the smallest amount of alkaline salts. It is distinguished by the following characteristics:

"*First*—Its roots must neither have the form of a carrot, nor of a tuber, but be shaped more like a Bartlett pear. It must be long and slender, gradually tapering, and free from large lateral roots.

"*Second*—It must not grow above the surface of the soil.

"*Third*—It must have a smooth white surface, and the flesh be white and hard.

"*Fourth*—Its size must not be too large, and its weight not exceeding five to eight pounds.

"The white Silesian beet, which is the one in general cultivation for manufacturers, unites most of these qualities; and of other kinds those are most preferred whose foliage is not upright, but broad, spreading, and lying upon the surface of the ground The roots of beets possessing this peculiarity grow entirely beneath the surface."

SOILS ADAPTED TO THE CULTIVATION OF THE BEET.

The most productive soils are those composed of clay and sand, being at the same time somewhat calcareous, deep and easily ploughed. Sandy soils which contain clay and carbonate of lime also yield good crops, if they do not suffer from prolonged drought. On soils almost entirely argillaceous or calcareous the beet root attains but moderate size, and is liable to suffer from drought as well as from wet. Argillaceous soils, in order to be fitted for the cultivation of the beet, must be improved by draining. It is impossible to raise a good crop on gravelly soil, whatever may be its chemical constituents, inasmuch as the roots bifurcate and divide into several smaller roots, which are afterwards very injurious to the machinery when the roots are cut.

Grant, in his treatise before quoted, says: "Ground that is mellow, warm and fertile, free from saline and alkaline constituents, not sour, and of a nature little liable to suffer from drought, easy to work late in autumn and early in spring, with a comparatively permeable subsoil, penetrable by the tap-root of the beet, that affords natural drainage so that it may be worked soon after rains, is suitable for the crop in question."

Count Chaptal, a great cultivator as well as a sugar manufacturer, says: "All grain fields are more or less suitable for beets, but especially those having a depth of twelve or fifteen inches of rich vegetable mould. Fine, sandy alluvial bottom lands, overflowed in the winter or early spring, are favorable for the beet, and they need no artificial manure, as

they are enriched by the inundations. Beets require to be planted on thoroughly cultivated land in which the sods are entirely rotted."

The beet is generally cultivated in rotation with other crops, the same ground being successively sown with beets the first and second years, wheat the third, clover the fourth, and oats the fifth. When manure is more sparingly used, a rotation of crops every four years is practiced; the yearly order being beets, wheat, clover and oats.

METHODS OF CULTIVATION.

Beets are grown in two principal ways, in drills and in hills. The latter method has of late years been much practiced in Europe, and is attended with highly satisfactory results. In drill cultivation the Dombasle plough, drawn by ten oxen on heavy and by eight oxen on light soils, is used. The depth of the furrow is never less than twenty-eight or thirty centimetres, and frequently thirty or thirty-five when the soil is of such a character as to permit of it. A furrow of this depth allows the root to strike deeply; and though the formation of the furrow requires the exercise of considerable power, yet it brings to the surface in places where good soil is scarce, the argillaceous subsoil, which on coming in contact with the air is fertilized and improved by mixing with the vegetable soil and manure, the depth of the fertile ground at the same time being increased.

Argillaceous soils are all twice ploughed before winter, and must be ready before the heavy frosts. It has been noticed that after thawing these soils become very friable, and that part of a field which is ploughed before the frost yields a crop far superior to that part of the same field ploughed in the spring. Light soils are ploughed in the spring, when manure can be more freely used, large quantities being produced during factory work, which lasts from September fifteenth till January thirty-first, during which time the largest number of oxen are fattened. The same methods of tillage are employed on soils on which oats have been sown the year before, and on which a crop of beets is to be grown, as on those which have grown one crop of beets and are to be again planted for a second crop.

Manuring.

As soon as harvest is over manure is hauled from the stables to the fields, at the rate from fifty to sixty cubic metres to the hectare, on soils on which oats have been grown, and which are to be planted with beets On soils on which a second crop of beets is to be raised the same amount of manure should be used, although growers are often obliged to content themselves with less. Stiff and clayey soils are first manured and ploughed, and the ploughing should commence as soon as the manure is spread over the ground, the weather permitting, in order to have it perfectly mixed with the whole mass of earth.

Cultivation in Drills.

When the ground is suitably prepared by ploughing, the sowing is done in drills, about sixty-five or seventy-five centimetres apart, by means of a wheelbarrow drill, or horse machine, which facilitates the subsequent operations of hoeing and digging. Hoeing is very important, for if the weeds are not torn out in time the tender beet will be soon overgrown and killed. Digging must be done also, without delay,

although the operation is seldom so urgent as that of hoeing. After hoeing, all the places where the seed has failed to take root are carefully replanted. For this purpose, the plants thinned out from the places where the lines were too close are made use of. Another object of replanting is to preserve a regular distance of twenty-five to thirty centimetres between the plants, with the drills from sixty-five to seventy-five centimetres apart. From forty-six thousand to fifty-three thousand plants (without counting failures), having an average weight of eight hundred grams each, can be grown per hectare—a total of from thirty-two to forty tons.

In average years the crops raised on good soils in the Aisne, Oise and Ardennes Departments, where there are a great number of sugar factories and distilleries, amounts to from thirty to forty tons per hectare.

Cultivation in Hills.

This system of cultivation is fast superseding the older methods, as much more abundant crops can in this way be produced, some growers succeeding in obtaining sixty tons of roots per hectare, where under the old system from thirty-five to forty tons only were raised. This method of cultivation requires much more care and labor than cultivation in drills, but the roots produced are much more dense and rich in sugar.

The soil is thrown either with a common or double plough into two bands or furrows, one against the other; soil so prepared presents conditions more favorable for development of the roots in length and density, and at the same time diminishes the size of the collar, which portion of the beet contains the smallest amount of sugar. Ploughing and manuring are done as in the other method of cultivation, with the exception that the manure is buried in the middle of the hills, where, from greater contact with the air, it more readily decomposes.

With heavy soils it will be found convenient to prepare the hills in the fall, so that the soil, by contact with the air and winter frosts, may be rendered more porous and friable. As the hills so prepared settle a little, it will be necessary before planting to run the double plough between the furrows. Where fields are not manured until spring, the hills should be formed as early as March, the ground being first harrowed, then ploughed, then rolled with a heavy roller. The hills are made a second and even a third time, each of the operations being followed by rolling, so that all the hills may have an equal height, and that the summits of the hills, in which the beet is to take root, may be firm, and not so liable to be dried up by the winds which prevail at that season of the year. During the preparation of the hills, from two to five hundred kilograms of Peruvian guano is sprinkled over them, according to the quality of the soil.

The distance between the hills is important, as it affects, in more than one way, the growth and culture of the beet. The inclination of the sides of the hills being about forty-five degrees, the greater the distance between the hills the higher their summits will be, and the greater will be the length of the beet. The soil also, with high hills, is better drained, better permeated by the air, and easier influenced by the first heats, a circumstance which will facilitate early sowing and prolong the time of vegetation for the beet, increasing also the amount of sugar.

The distance between the hills contributes, also, to the facilities of cultivation. The leaves readily develop in the space allowed them, and

are at a sufficient distance from the ground so as not to be affected by the radiation of heat, which always destroys some of the leaves in flat cultivation.

The practice now is to make the hills fifteen centimetres high and eighty centimetres from the top of one to the top of the other. The hills are made flat on top, in order that the beet in its first stages may develop freely, and penetrate the whole depth of the soil. A thorough rolling always precedes sowing.

Sowing.

Sowing is done either by machines or by hand. In the first method, an ordinary sowing machine is used, whose wheels have been exchanged for movable gorged rollers, which round off the edge of the hill, and are capable of being adjusted at the same time so as to correspond to the irregularities in size of the different hills. Sowing by hand is, however, more easy, more economical, and insures a better crop.

In hand sowing, two or three seeds are planted in holes two or three centimetres deep and fifteen centimetres apart, when the hills are eighty centimetres from each other. They are covered with earth to the depth of two centimetres, which is afterwards lightly pressed, to make the earth solid about them. The tool used in hand sowing is a small fork, with two prongs fifteen centimetres apart, corresponding to the distance of the holes from each other.

In machine sowing, from twelve to fifteen kilograms of seed is required per hectare, while hand sowing requires only from six to ten kilograms of seed. There is also a marked economy in the amount of labor required in hoeing and digging, as the plants come up more regularly and are more uniform in size. The yield of roots by hill cultivation may be estimated as at least one-fifth greater than that obtained by cultivation in drills. A field of ordinary fertility, cultivated and sown as above described, and well manured, will yield fifty tons of beets per hectare, and eighty tons per hectare may be raised if there are no failures, and if each root weighs one kilogram, there being eighty-five thousand plants per hectare.

Hoeing and Weeding.

About the first of April, when the roots have attained sufficient size, the first hoeing is done by hand. The earth is gently raised on both sides of the hill, without touching the summit where the beet root is planted. This operation is done with a tool made for this purpose, the effect of it being to scratch the soil lightly, as if with a gardener's rake.

The tool is formed by two small harrows, about sixty or eighty centimetres long, connected together. These harrows are provided with teeth three or four centimetres long, and this tool is pushed backward and forward by a handle, with more or less force, according to the nature of the soil.

The first weeding is done ten or fifteen days after this operation of harrowing, when the plants have acquired sufficient strength, and the first leaves are sufficiently developed. The workmen use a small and light hoe, and must be particular to destroy the weeds without injuring the young and tender plants. About the last of April and the beginning

of May, the plants are weeded out. They are still small, but it is important not to delay the operation, because immediately after weeding they increase rapidly in size and strength, and are prepared to resist the injurious effects of heat and drought. If, on the contrary, the weeding should be delayed till the beets have become strong, they would grow up with only two leaves, and their future growth would be retarded.

Only the strongest plants of each cluster are permitted to grow up. When the weeding has been once thoroughly done, it will be seldom necessary to repeat it; the growth will be sufficiently active to cause the leaves of the young plants to cover the summit of the hills. Toward the end of May the plants are hoed a second time, the ground on the sides of the hills and between them being loosened by a light plough, from which the share and coulter has been removed. A plough is preferred to a cultivator, for the hill is cut by it on both of its declivities, and the weeds are buried and made to rot in the middle of the small furrow. By this treatment the soil is also aired and fertilized, and the summit of the hill remains to be hoed by hand. A cultivator scratches up the soil without fully tearing up the weeds, and necessitates a liberal use of the hoe to complete the work.

Hilling Up.

Toward the middle of June, when the beet roots have acquired a strong growth, earthing up, or hilling, is done. This is an important operation, in which care must be exercised if a large crop is desired. It is of as much importance as deep ploughing, without which a good harvest is impossible. The plough used to prepare the ground for hoeing is also used for this operation, but the coulter and share are not removed. At the time of sowing, the hills being made very flat, the roots strike into the earth to the entire depth of the loosened soil. In this second ploughing the earth is thrown up above the collar of the beet root, and thus allows it to develop toward the summit of the hill, while at the same time it penetrates into the soil, and acquires often a length of from forty to fifty centimetres. Care must be taken not to leave the collar of the beet uncovered, in which case it would contain far less saccharine matter than the rest of the root.

The Bodin heaper may be employed for hilling, but it has the disadvantage of not throwing the earth to a sufficient height above the collar of the beet.

Harvesting.

Toward the fifteenth of September the beet crop is harvested. The beets are known to be ripe when the leaves become yellow and fall off. In spite of its length, the root can be easily torn out by the hand, by inclining it toward the side of the hill. The plough is also used for this purpose, the share and coulter having been first removed. It is directed into the middle of the hills, under the roots, which fall on either side, partially covered by the earth, which protects them from the early frosts. The roots are now cleaned, the collar removed, and heaped together. Should a frost be apprehended, the heaps are covered with leaves until they are collected in carts and placed in the pits.

The use of the plough in harvesting effects a notable saving in time and labor; nor is any of the labor lost, inasmuch as the ploughing is useful for the succeeding crop, whether of wheat or beet root.

When two crops of beet roots are to be raised successively, every

movement of the soil is beneficial, and it is not unusual to see the second year's crop much better than the first. The soil which has been assiduously cultivated and exposed in hills for a year to atmospheric influences is well adapted to the growth of a second crop. The cost of cultivating the beet in hills is no greater than in drills, all things being considered; the plow takes the place of the hoe to a great extent, a larger surface of ground is exposed to the influence of the air, and the cultivation is deeper than that possible under any other system of cultivation.

PRESERVATION OF THE BEET.

The proper conservation of the beet root plays an important part in the manufacture of sugar or alcohol. Many manufacturers lose large sums of money annually by the roots being attacked by the frost, which renders them useless for manufacture, or by their becoming blighted, which causes the root to sprout, and eventually deprives it of the best part of the sugar and renders the extraction of what remains extremely difficult. The beet should be so preserved as to be in exactly the same condition when worked up as it was when taken from the ground.

In France, and other countries, when the climate will permit, the roots are usually stored in heaps in the field or open air, and are protected by a covering of straw and earth, provision at the same time being made for drainage and ventilation. In making one of these places, or root-houses (*silos*) for the storage of the beet, a trench is first cut in the ground, over which the beets are afterwards placed in piles. The trench is made eighty centimetres wide and from sixty-five to seventy centimetres deep. The length varies according to the quantity of beets to be stored; it must be, however, at each end about one metre longer than the pile of beets. This trench is then covered with branches of trees or shrubs sufficiently thick to prevent the beet from falling through, but not too thick to prevent the air from freely circulating upward through the roots. In the middle of the pit a triangular chimney, made roughly of pine boards three centimetres thick, twenty centimetres broad, and one and a half centimetre long, is set up. The beets are then piled up over this trench so as to form heaps with sloping sides about three metres wide at the base, and from twenty to twenty-five metres long, according to the length of the trench. No special care need be taken to make the piles regular in appearance, the beets roughly thrown together will naturally arrange themselves to the required shape. The height of the pile is usually about one metre and a half, corresponding to the height of the chimney. The upper part of the pile should be regular, so that the roof with which it is covered may fit evenly. The cover or roof is made of three pine boards so arranged as to fit the top of the pile. The sides are braced together at certain distances by grooved tie pieces, the groove of which is .08 centimetres square. The width of the boards which form the gutter is from two hundred and twenty to two hundred and fifty millimetres. The length is of less importance, as the gutters or roofs can be placed one after the other, according to the length of the pile. The most convenient length, however, is from three to four metres, which enables them to be handled with ease. At the end of the season they are stored away, and may be used until entirely worn out.

As soon as the pits are ready they must be covered with straw and a layer of earth, from ten to twelve centimetres in depth. This may be done on any day, not rainy, whether warm or cold. The straw spread

between the roots is quite necessary, for, being a non-conductor of heat, it prevents the roots from being injured by the heavy frosts, and supports the earth with which the pile is covered, leaving a free space between the beets themselves for the circulation of air. Near the chimney a triangular box about one metre long is placed, made of thin boards and extending into the pile. It opens at the top into the gutter or roof and is intended for the thermometer.

The preservation of the beet is divided into two operations: 1. Storing away the beet 2. Superintendence of the pits.

The beets when stored must be well cleaned; that is to say, freed from the dirt attached to them, and the collar cut away, for any portion of the leaves remaining on the roots will become rotten in a few days and produce fermentation in the pits. Care must also be taken not to put into the pits any roots damaged during loading the carts, by the horses' feet or by the wheels. This rule is easy to observe, and such damaged beets may be worked up immediately.

It is easy to see that the good preservation of beet roots depends upon their being kept cool, yet free from frost, and dry and well ventilated. The root-houses are constructed in the manner described, in order to secure these essential conditions. A continuous current of air entering at each end of the trench passes upward through the floor of branches or brush, penetrates the pile of beets, and finally passes out of the chimney at the top and at the ends of the roof or covering.

The temperature of the pit should never exceed three, four, or at the most five degrees above the freezing point.

The following are the methods adopted for maintaining the equable temperature.

Let us suppose that when the beet pits were made the weather was moderately warm, about eight degrees above the freezing point. The temperature in such a case should be lowered to three or four degrees. This is done by closing the ends of the canal and gutters with straw stoppers during the heat of the day, when the temperature is above eight degrees, and by opening them in the evening and during the night, when the temperature has fallen below that point. By introducing the cool air in this way during the night and excluding the warm air during the day, in the course of a week the proper temperature will be obtained.

To maintain the temperature of the pits at this height, it will be only necessary to stop up the openings completely, whenever the outside temperature is higher than four degrees, or lower than the freezing point.

That the differences of temperature may be obtained a thermometer is introduced, which indicates the temperature of the air passing into the lower canal while another is placed in the triangular box above referred to, which will indicate the temperature of the mass of roots.

The whole superintendence then consists in stopping and opening the gutters as occasion requires. In this way, with proper care, the beets can be preserved till the end of March, without sensible alteration.

The pits are usually from twenty to twenty-five metres in length. When placed in a line there is about three metres between them. When placed, however, in parallel lines, the canals are dug five metres from each other, in order that there may be between the pits room enough to take the earth intended to cover them. One thermometer will be sufficient for every five or ten pits. A pit twenty-five metres long, and made as above described, will hold from forty to forty-five tons of beets; and

if they are at the above-mentioned distances from each other, two million and a half of beets can be stored in pits on a single hectare.

Another method, which is more economical and generally used, consists in placing the beets in longitudinal heaps, about two metres wide at the base.

At harvesting, a thin layer of earth spread over the sides only is sufficient.

This allows the whole mass to become cool, and when the temperature of the air falls below the temperature of the beet, which is often the case in the fall of the year, the air permeating the interstices of the mass, and being necessarily at the same temperature as the beet itself, has a tendency to rise. The thin layer of earth covering the sides allows a sufficient circulation of air, which takes the place of the warm air escaping at the top. The proper temperature is thus obtained, which prevents the beets from being heated to such a degree as to cause their decomposition, which would take place were they entirely covered. The precaution of covering the beets with a thin layer of earth at harvesting is of great service, as it insures them against the hoar frost. As the season advances, to protect them from the heavier frosts, it will be necessary only to add more earth to the whole surface.

This method of conservation answers all purposes, provided proper care is taken. The great surface of the walls of the piles, and the large amount of earth to be heaped up, render this method, nevertheless, quite an expensive one.

Still another method has been devised, less expensive than the two preceding ones. The beets are placed in heaps from six to eight metres wide at the base, and from two to three metres in height, with gently sloping sides covered with earth. The heap, which extends as far as the supply of beets and the surface of the ground permits, is flat on top, and covered with straw alone.

The only precaution to be taken is to admit the air to the heaps from below, so that it may freely penetrate the whole mass. In order to effect this, air drafts are established by digging channels in the earth, before storing the roots, to the depth and width of forty centimetres, running transversely to the heaps, and of sufficient length to extend beyond the pile when covered with earth, in order that the openings may be free. This being done, the piles are covered with earth on the sides and with straw on the top, and the air channels left open from the outside. The circulation of the air will be free and in proportion to the difference between the temperature of the pile and that of the outside atmosphere, and by this means good ventilation will be effected. The only care required is to tend the air drafts, and not open them unless the temperature of the outside air is above the freezing point. For this purpose small heaps of dung are kept ready near each opening, with which they are to be stopped when the nights are too cold. In order to ascertain the temperature of the mass, so that it can, when desired, be maintained at a fixed point, there are set at different places in the mass channels made of small boards, jointed together, so as to form an open-work frame, extending into the pile about half its height, in which a thermometer can be placed, which may be inspected from day to day, in order that the progress of cooling may be watched. It is thought that the temperature is sufficiently low at three or four degrees above the freezing point, at which time the cooling process is stopped and the openings closed. The straw on the top of the heap will be sufficient to protect the beets from ordinary frosts. Should heavy frosts

be apprehended, it will be well to cover the straw with a thin layer of fresh manure or earth.

Where it is intended to preserve the beets for a long time, the first method of conservation should be adopted, as the results obtained are more satisfactory, and as this method requires less attention.

When the beets are to be worked up during the first month of fabrication, the second method will suffice.

The third method is less costly than the first, but nearly an equal amount of care is required for the superintendence of the pits.

INAUGURAL ADDRESS.

DELIVERED AT THE EIGHTH ANNUAL FAIR OF THE NORTHERN DISTRICT, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Hon. W. H. PARKS, President.

Ladies and Gentlemen: It has been customary for the President, in calling the society to order at each exhibition or fair, to make a few remarks. Sometimes addresses have been prepared appropriate for the occasion, and I do not know but what some one expects that I have prepared such an address; but, unfortunately, Presidents are not always chosen with a view to their capacity for delivering addresses, and at this time you have such a President. I have not prepared such an address, for the reason that my own business has occupied my whole time; and whatever I say this evening will be impromptu, and such suggestions as I think most appropriate.

I certainly can congratulate you, as each President has had occasion to do before, upon the success of this society. Although the numbers here to-night are but few, compared to those who have assembled here before, the fair, the exhibition, the result is a success.

At the organization of this society, the successful cultivation of the different fruits on exhibition here to-night was an experiment. The organization was to encourage the cultivation of these fruits and the grains which are bountifully supplied to us at this time. It is no longer an experiment—no longer a problem as to whether we have a State capable of producing all the fruits desired by us; no longer an experiment whether our State is susceptible of producing all the grains that can be consumed by its inhabitants and sufficient for millions besides; consequently the numbers are not so great now as formerly, of those who take active part in developing the resources of our State. This, perhaps, may be an apology for an apparent lack of interest in the citizens and the members of the society.

There are interests, however, in my opinion, of greater importance now than ever before. We have demonstrated that we can produce them in abundance and surplus; and now comes the question, what shall we do with the surplus? When we first commenced producing, we had a population of miners, who consumed all that we produced; and three times the amount we produced we had to import. It is now reversed. We produce more than all our miners and all our inhabitants can consume, and we must look to a foreign market; and the question now comes, can we compete with those who are more favorably situated in regard to the

market than we are? This is one of the great questions which must yet be solved, and it is an experiment as to whether this State shall succeed as an exporting State.

We cannot with safety take as a basis the past three years, because we have had more than average seasons during this time; and at the same time we have had a foreign demand that we have no right to expect in coming years. Now, the question presents itself to this society, and every member of this society who expects to be a producer: Can we compete or not? And instead of inducing persons to engage in the products, now we must look to the exportation of what we raise. We must look to our commerce. We must look to the mode and manner of disposing of our crops. This is the question—much more difficult to solve than the one of producing. It would be idle for me to attempt to lay down any rules for this society. I can only suggest that the society take such measures as are in its power for the solution of this question. It is in the power of this society to act in conjunction with other societies to lessen the cost of production. It is in its power to assist in lessening the cost of transportation; to assist in reducing the commissions of sale—almost to dictate the terms upon which our products shall be disposed. By the terms, I mean mode and manner in which they shall be shipped. Our commerce is impaired by extraordinary taxation. There is, perhaps, no port in the world burdened with so heavy charges as San Francisco; perhaps no place in the world where the freights are so high as they are from any given point in this State to San Francisco, for the same distance. These are the influences with which this society and community have to deal. But perhaps, before looking to commerce we must look to our own immediate affairs, that is, the matter of production We are now producing at extraordinary expense, by which I mean, as compared with other countries. It is only because our soil is fertile and climate salubrious that we can at the present time compete with other countries.

In this matter of production we find the labor question one that is much agitated at this time, and has assumed such a shape that, perhaps, it will not become me to discuss it. But I think it is one that every body interested in the welfare of the State must reflect seriously upon, and arrive at some definite conclusion. We need more laborers, and the labor must be furnished at a less price. In order to get that labor, the laborer must be protected in his *right* to labor. We have been here for years waiting for capital; we have invited capitalists to bring it here for investment. And the first question that capital asks, when it arrives in the State of California, is: Where is your labor. Where is your labor to build railroads, to fill manufactories, to produce tea, coffee, sugar, silk and hemp? No one can tell, and capital retires.

Let this society, then, take some action on this question, and act in unison. Let them see that some particular classes of laborers are permitted to come to our State and labor for what we can afford to give them, and not be molested by those who are here, who neither wish to labor themselves or permit others to do so. Without it we cannot expect to have manufactories, nor a large number of that desirable class, the farmers—the small farmers. It is said by some that our farms are too large, and must be sub-divided. I answer that it is at present impossible for any small farmer to sustain himself. It is not the enormous profit that he makes in producing, but it is the small profit upon an enormous quantity that enables him to farm at all. In order to have a population of small farmers to enrich our country, as we eventually

shall, labor must be supplied to them at cheaper rates than are now ruling. The one hinges upon the other.

Another question that is now agitating the minds of many, is that of doing away with fences—an item of enormous expense to farmers. When a man invests one thousand dollars here for land, he is required to invest two thousand dollars to fence it. Almost every man who desires to farm, has the means and ability to acquire a small farm in this country; but there are those who cannot acquire even a small farm and fence it as required by law. In other words, one man with six or eight cows, perhaps, will come into a neighborhood, and prevent ten men from producing a thousand bushels of wheat each. In my opinion it is most absurd. There is no reason why one individual should pursue an occupation to the great injury of hundreds of others; no reason why A should be compelled to build *two miles* of fence that he may raise three hundred bushels of grain to accommodate B who milks three cows. Let B take care of his own cows; let him fence ten acres, or in other words, let him keep his property from trespassing on mine.

This question is just commencing to be agitated, because perhaps stock keepers have heretofore predominated, and it would have cost more to fence the stock than the grain; now the thing is reversed and it costs ten, yes twenty times the amount to fence the grain that it does the stock. Should we not then welcome any measure of relief from this burdensome tax of making and keeping in repair so much superfluous fence.

There has been manifest in California a spirit of opposition to the combination of capital. I think wrongly so. I believe there is nothing better for our State than that the land should become the property of individuals. It is true it would be better if we had an owner for every one hundred and sixty acres within our State; but we have not the inhabitants. And when they come here and demand the one hundred and sixty acres they will be sure to get them. But in my opinion, the sooner the land of California becomes private property the better for the State; because where there is one man who will invest in land, let it pay large or small, and that will let it lie idle, there are ten men who will cultivate it to some extent. Therefore I say it is an inducement to men to cultivate a large number of acres now, hoping at some time to realize a large fortune therefrom. It is yet a problem whether such hopes may ever be realized.

As I said at the outset, I do not intend to discourse these various questions, but merely to suggest to the society the questions now before them, which are of great importance. It is a question as to whether the State shall maintain its present position as a producing State; and the answer hinges upon the manner in which these matters are settled. I say that under existing circumstances it is impossible for this State to produce grain and compete with other countries more favorably situated. We cannot afford to export.

When the foreign demand is less than now our granaries will overflow in less than six months, and there will be no market for us. Then, I say, we must first have cheap freights, increased commerce, do away with fencing and with every expense that is not actually and absolutely necessary, and produce at a much less cost than we do now. Will this society decide upon these questions? You may say that the President accords too much power to this society. I admit it, under the present mode of management.

Whilst every man comes here merely to get a small premium upon the largest apple, or the finest horse, or the biggest cow, the society has no power; it only affords, perhaps, pastime for a few to congregate and exchange ideas upon the manner of raising fruit and stock. But it does not meet the question. Each citizen must belong to the society; must hold himself responsible for its success, and not come here expecting that six, eight or ten men will be responsible for its success, as is now the case. I will venture to say that outside of twenty men there has been no one to look after the affairs of this society, or to feel any very deep interest, further than in the exhibition of his own particular productions. And where one man comes with the spirit to sustain the society and to make it a success, many come with a spirit of captiousness and complain that they have not been fairly treated. By whom? By themselves; they are the society. They have the say, and they have the vote. But they attempt to tear it to pieces. They have not yet succeeded, and I apprehend never will. But it makes it disagreeable, and every man who has the honor of presiding over this society, either as President or otherwise, once, resolves never to receive the like honor again. And I confess that a man must have more good nature than I possess to go through it without being somewhat roiled.

I regret exceedingly that there is not a greater number of farmers present to-night. I had prepared in my own mind a little ground work for a talk to them, but on seeing that I had to address an audience, who perhaps will not feel themselves responsible for the success of this fair, I am somewhat thrown off the track. I regret that I cannot entertain them in a better manner. But I will excuse myself by saying that on to-morrow evening if they will come, they will have the pleasure of listening to the eloquent Dr. McKaig, who will address them upon the subject of agriculture. And now, after thanking you all for following me in these abrupt remarks, I will bid you good night.

ADDRESS.

DELIVERED BEFORE THE NORTHERN DISTRICT FAIR AT ITS EIGHTH ANNUAL SESSION, AUGUST TWENTY-FIFTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Rev. WILLIAM McKAIG.

Mr. President and Gentlemen of this Association: Allow me to congratulate you on being permitted to assemble again in this hall, under such favorable auspices, to celebrate your annual industrial jubilee. Another year has rolled away, and Ceres from her golden horn has poured out a bounteous harvest of flowers, fruit and grain, health and good cheer; and now from the snow-fed springs of the mountain, the blooming vineyards of the foot-hills, and the broad and fertile valleys, you come together in tents and booths, like the old Hebrews at the Feast of the Tabernacle, after the autumnal vintage, to talk over the history of the past, the prospects of the future, and display the prospects of your skill and labor. It is too late now to question the utility of these industrial convocations. It is admitted on all hands that agriculture, at least, has greatly improved since the establishment of the custom of holding annual fairs and exhibitions. Before that, the husbandman wanted the improvement that comes from the fellowship of kindred workers, the collision of ideas, the interchange of experience and the zeal excited by publicity and commendation. Scattered widely over the face of the country, immured in quiet rural seclusion, they saw but little beyond their immediate neighborhood. They did not meet in annual conventions for debate and mutual edification, as the ministers and physicians. They were not quickened by professional rivalry and ambition as the lawyers during Court term. The papers did not puff and advertise the wondrous products of the fields and vineyards as they did the wares and commodities of the city merchant. Each farmer lived apart, doing his own work in his own way; marketing his grain, vegetables and eggs; selling his pork and wool in silent isolation; learning nothing from the experience of others, and rarely improving upon the methods of his ancestors. State and county agricultural associations have helped, perhaps, more than any other agency, to break up this monotony and stagnation. They bring the cultivators of the soil so intimately together, that the skill, talent and experience of one becomes the heritage of all. Hence, prosperity and increased intelligence have marked the history of every State and community that has fostered these exhibitions.

You will hardly expect of me, however, an address upon any of the subjects directly appertaining to the object of this association. My

studies and habits of thought wholly unfit me for the task, and I should make myself ridiculous to attempt it. Rural life and industry as a school of manhood, is the topic I have selected, and I trust you will find it in some degree not unrelated to the occasion. Labor, like everything else, has an end in view. Its first and lowest aim is to make a living. Man is a feeding animal, and that want is the spur that quickens his latent energies. Hunger drives the savage to hunting, fishing, grubbing for roots or planting a patch of corn and potatoes. Inclement weather compels him to clean out a cave, thatch a hut and seek the rude materials he needs for clothing.

As Christianity was cradled in a manger, so our proud branching material civilization was born of a sensation, received its first impulse from the thrill of a nerve, the imperious cry of a physical want. But he who toils merely to eat and drink, to pick bed and board out of nature, pastures upon the surface of things, and is not far removed from the instinct that prompts the animal to crop the grass, or the hawk to pursue its prey. His firmament is a mud sky, and no bright ideals of a better condition sing to him from the future. And yet how many there are, even in the most enlightened community, who barely live from hand to mouth, to wear out the dreary day, mere plodders and drudgers that never arise above the circumstances in which they were born. And he who lives solely for material gain, to add lot to lot, acre to acre, dollar to dollar, is very little better off, in soul force and moral power, than the groundling who lives to tickle a few nerves on the tip of the tongue. I heard of a man, the other day, so completely materialized that the Assessor was compelled to tax him as real estate. Could you look through the body as a transparent glass case, and read the interior motives, thoughts and purposes of the soul, you would be astonished to see how many people there are happily lifted above pressing physical necessities that are only half emerged from the earth, and not even "pawing to get free," like Milton's lion, but are content to absorb, bloat and die.

But labor has still a higher end than merely to feed and clothe the body or add to our possessions, and that is to idolize and perfect our work. Through diversified agencies and with varied talent one is called to work out his mission as a sculptor, another to paint, another to sing, another to plough, another to plead law, another to preach, and another to practice medicine Now, it is a duty we owe to ourselves and to humanity to do thoroughly whatever task is assigned to us. It is a noble, manly ambition to make the best of our calling, though it be to shape a horse shoe, drive a stage or sew a welt. The ambition is the spring of all progress in the practical utilities, arts and inventions. It is the healthy enthusiasm and emulation that gives us such wonderful improvements in machinery, model farms, tasteful gardens, charming varieties of fruits and flowers, and fine breeds of horses, cattle and sheep. Your agricultural associations are helping to foster this spirit of generous rivalry by the premiums, medals and public honor given to the most successful competitor. Only so far as the farmer is possessed by the ambition to excel in his special calling will he rise above the drudgery and routine of a mere plodder.

But there is a still higher end to labor than merely to excel in one's calling, and wear the red and blue ribbons of honor. To live merely to excel in one's special art and vocation is good, but not the best thing a man can do for himself. Labor must do more than feed and clothe, take out patents, and smirk and grin for an hour's applause. It should ennoble the worker, enrich his mind, sharpen his perceptions

store his memory, regale his imagination, elevate his aims, strengthen his principles, and in short make him a wiser, truer, better man. The chief end of every vocation should be the fullest, ripest manhood of all who are engaged in it; and just so far as it fails to secure this result it becomes a drag upon the highest energies of the soul. It is not age that makes the man. You may find some men that stand six feet high, with broad shoulders, looking down into a well of memory forty or fifty years deep, that are mere boobies. They are men only in avoirdupois.

> "We live in deeds, not years; in thoughts, not breaths;
> In feelings, not in figures on a dial.
> We should count time by heart throbs. He most lives
> Who thinks most, feels the noblest, acts the best."

We come to manhood only in the comprehension, development and maturity of all the faculties we possess. To attain that perfection of our powers should be the aim of our life, and every calling and pursuit should be made as far as possible to contribute to that end. The soul possesses "the powers of an endless life." This world is its first school to educate those powers. Every calling you pursue is to some extent a teacher in this school; and if the farmer, the trader, the artisan, the physician, the lawyer and the minister has not been made truer, nobler, stronger by his vocation, then his life has been a lamentable failure. Now, the life of the farmer and dwellers in the rural districts, it seems to me, are peculiarly fitted to produce a broad and generous development of some of the most noble and sterling qualities of manhood. I am sure, at least, that their condition has been too greatly underrated and restricted.

Allow me to call you attention to some elements of a noble manhood that country life and agricultural pursuits may help to foster.

The first element of manhood I name, is physical health and manly vigor. We cannot too highly value bodily energy, a robust constitution, good digestion, steady nerves and strong, tough thews. They are as essential to a well developed manhood as a deep, solid foundation is to the stability of a building. The soul carries the body as the tree its bark or the snail its shell, and so long as this marriage of matter and mind continues, they are practically one, and must naturally bear each other's infirmities. Like the Siamese twins, they breathe and walk simultaneously, and one cannot take a spree and the other keep sober. Hence, the trite law of Juvenal, "a sound mind in a sound body" cannot be despised by any one who wishes to realize his fullest powers. You must possess physical health in order to be intellectually and spiritually well. The heart must pulsate rythmically in order to feel happy. A bilious condition makes an atrobilious temper. Peccant humors in the blood fills the mind with all kinds of dismal fogs and vapors. Without good health and bodily vigor, fine talents, the inspiration of genius, refined tastes and a bountiful supply of wit and humor only intensifies one's misery by making him conscious of powers he dare not fully exert. Now, it is happily the lot of the farmer to follow a calling that, perhaps more than any other, furnishes that desirable element of manhood, good health and a bountiful supply of physical vigor. All manual toil tends to develop the body but not all in equal proportion. Some only call into exercise a certain set of faculties, such as the eye, the ear, the touch, and hence the physical benefits are partial, Some exert deleterious influence and tend to shorten life. Thus, our life tables show that printers, mechanics, painters, tailors and shoemakers

have the lowest average. Indoor confinement, want of sufficient exercise, breathing irritating substances and noxious odors from the material of their work, reduces their average to thirty-six. At the head of the health list stands the farmer, whose average is sixty-four, seven years longer than the lawyer or minister, ten years longer than the doctor, and nearly thirteen years longer than the blacksmith and jeweller. Such is the influence of farm labor and country air on physical vigor. It gives the longest lease upon life.

And then the dwellers in the rural districts are exempt from those tempting artificial irregularities that so early sap and wither humanity in large towns and cities. Saloons, theatres, gaming clubs, billiard rooms and restaurants, with their brilliant lights and gorgeous attire, do not attract the laborer, at the close of the day's work, to late hours, dissipation and unnatural excesses. He is not so apt to arise with a bad headache in the morning, a macaroni sky, and fagged, jaded and irritable, drag himself languidly to his work. How many worn by thought, harrassed by commercial care, or broken down by carousal and connival pleasures, have exclaimed with Talleyrand, "Oh, that sleep could be bought—that it was in the market at any quotation." The farmer is not liable to this nervous sleeplessness, does not have to woo Morpheus with opiates, cordials and hot slings, and is not apt to be chased in his sleep by horrid monsters, bitten by ogres, and awakened by strange noises, stumbling over graves or plunging into rolling floods. You may safely wager that the young bacchinal who dreamed that the devil came one night and sat down upon his stomach, holding the Bunker Hill Monument in his lap, did not live on a ranch. And then what an appetite the field laborer has? He needs no rum bitters, nor brandy cocktails, to appreciate his breakfast. And what large families they have in the country. Fresh rosy girls, that blush without paint, and stalwart boys that do not stray out too late at night and early wreck their virtue and manhood upon the Barbary Coast.

The second element of manhood consists in mental activity and a richly furnished mind. Man is distinguished from all the lower orders by his intellectual nature. The birds sing but they never compose music. The bee and the beaver build but they possess no system of architecture. The cattle roam in bands but they have no social organization. In poetic license, instinct may be considered as the dim harbinger of reason, but in no sense whatever can a man's dog ever rise to the dignity of a conscious partner or shareholder along with its master in the responsible trust of thinking freely and wisely directing. Only so far as you think do you live, and come into possession of your patrimony of existence. You live by eating, and wisely directed thought is a mode of mental nourishment. As the strength of the laboring man demands a regular supply of good solid food, so too, no one can hope to possess vigor of mind, agility of thought in planning and combining, who does not regularly supply the mind with wholesome material for thought. If you need cordials, appetisers, dainty morsels and pungent condiments to give you an appetite for your food, you are certainly in a bad way; but if you have a keen relish for the ordinary staples of the table you have reason to be thankful that you are in such good condition. So, too, if curiosity, the appetite of the mind, is wide awake to the beauty, order and wealth of the universe, and can find regalement in good books and journals, or art, science, history or some of the inviting walks of literature, then you are in a healthy state; but if the common-places of conversation, the saws about the weather, neighborhood gossip, the items of

the market, money quotations, and the price of corn, pork or wool, be sufficient to absorb and entertain you, then your intellect may as well speak for its shroud. Cultivated thought emancipates one from the narrow and restricted sphere of his calling and profession. No man should allow his business to measure his intellectual growth. No matter how useful or elevated it may be, you cannot afford to bury all your powers in it. The universe is around you; eternity is before you. All these stars are but the foot-lights of a mightier drama than any that can be enacted on the stage of time. And shall we who are destined so soon to take part in that endless scene, content ourselves in merely crawling over sacks of grain and bales of merchandise? And yet how many there are whose geography consists in running a section line, whose astronomy an occasional glance at the stars over the chimney tops, whose geology is all piled up in a stone fence, and whose botany is the dimension of a vegetable garden. It is all well enough to talk of fine apples and pears, splendid trotters and sleek Devons, but we must not forget that the fertility and productiveness of mind takes precedence to every thing else.

A well stored mind is the most substantial of our possessions. It cannot take fire or run away. It needs no lock and key, nor insurance policy. Even death cannot eject you from such a heritage. And now it is the common impression that rural life and industry is not quite so propitious a school for intellectual health and strength as it is for physical development. This may be true, but I am sure that it is richer in resources for thought and mental vigor than many are accustomed to think. If the cultivator of the soil has no higher ambition than merely to excel in his special calling and wear off the honors and premiums of the fair, he will need the vigorous exercise of his reflective powers. Skilled labor pays better than plodding routine, and dull stolid contentment with the old methods. And what if any bumpkin that can yoke a pair of steers and deftly twist a whip-cracker, can raise fine fields of wheat and barley, mealy potatoes and fat beeves; can any one, who has ever felt the pulsation of Divinity within him, be content to graduate the capacity of his intelligence to this standard? Then agricultural colleges, journals, fairs, and the many able works written on chemistry in relation to the soil, pomology, horticulture, the different breeds of horses, cattle and sheep, are fast elevating the pursuit of husbandry into a science, and no wakeful mind can willingly consent to live in ignorance of the literature of its special vocation. Every one should, up to his measure of ability, keep step with the age in which he lives. He should know something of its material developments, the progress of science, art, literature, politics and religion. And who has a deeper interest in these things than the farmer? In some degree all these avenues of knowledge and elevating enjoyment lie open to his exploring curiosity. The farmer who economizes his time, and who does not allow his business to make a drudge of him, may in rural quietude find more leisure for reading and meditation than the merchant or mechanic in the city, living in the midst of the excitement of trade, and hotly driven by sharp competition.

Another element of true manhood is a love and appreciation of the beautiful. All those material objects which give us pleasure in the simple contemplation of their outward qualities belong, more or less, to the realm of the beautiful. We are made to admire, to be pleased, attracted and thrilled with joy, as well as to think, reason and analyze, and certain forms, sounds and actions are endowed with the mysterious power of producing pleasurable emotions. A good taste is the capacity

of receiving pleasure spontaneously from those objects that were intended by the Creator to be grateful and pleasing. Now, this is too fair and large a domain of the soul to be left wholly uncultivated. And yet its gates are thought to be closed against the cultivator of the soil. He has to deal with utility, and not with the beautiful. Hence it has become common to speak of country people as rustics, bumpkins, clodpoles and mudsills. The politician calls them the bone and sinew of the land, a compliment equally due to horses and cattle. Now, I am confident that rural life and industry are far more favorable to the development of the finer sensibilities than they get credit for. It is true the farmer has no access to academies of design or galleries of art, and does not daily walk to his business under the shadow of sumptuous architecture, like the dwellers in the city. But, then, he dwells in God's spacious studio, and may actually see infinite thought at work shaping the clouds and painting the hills and fields in variegated hues and tints. It is God's ideal of beauty that breaks upon you in the glorious sunrise, that is spread before you in the picturesque landscape and sculptured hills and mountains—those "great cathedrals of the earth, with their gates of rock, pavement of clouds, choirs of stream and stone, altars of snow and vaults of purple traversed by the continual stars."

For, after all, what is nature but the embodiment of Divine thought, the graceful and flowing vesture that enwraps ineffable beauty, order and harmony. No beauty in a farmer's life! Walk through this Pavilion and gaze upon the fruits and flowers displayed upon these tables. These are not artificial, mere fruit and flower pieces of artistic skill, but miracles. Landseer and Bonheur may paint the most finished representatives of animal life, the horse, the dog, the cow, but you possess the original pictures which they copy. Surely the sweep of fields, snow-crested mountains, woodland glades, orchards, vineyards and gardens ought to be more soothing and refining to the soul than the piles of brick and mortar, the clatter of drays and milk wagons, and the ceaseless roar of mammon. And allow me to suggest to the farmer that it is a duty he owes to his manhood, to the public good, to give more attention to the esthetics of his calling. It is said that an ill-natured woman will knead her irritable disposition into the bread she makes, and thus affect the whole family with her unamiable temper. Be this as it may, we know that every man stamps his individuality upon his work. As you ride through the lane and look at a shabby, unpainted house, a straggling woodpile, rickety gates, sloven fences, and the mangy aspect of things in general, you say instinctively that a clownish, boorish mind must dwell there. A man cannot live in a muss, with pigs rooting in the dooryard, hens cackling in the kitchen, and everything in "confusion worse confounded," without becoming demoralized. Chameleon-like, we reflect the hue of our surroundings. Rural ornamentation, neatness and taste in architecture, and display of shades, flowers and smoothly shaved lawns would make home inviting and keep your sons and daughters from longing to escape from the dullness of the country to the giddy whirl and dissipation of the city. And let no one say that the farmer has no time to indulge in fancies of taste and refinement. He has many an hour of leisure quite sufficient for these little artistic endowments, once his sensibilities are quickened into a lively appreciation of taste and beauty.

Another element of manhood I must not overlook, is moral integrity. As you set your time pieces by the sun and adjust your hours of toil by solar regularities, so our moral nature should be regulated by the great

law of truth, right and justice. And now I may add that a very bad man in the country must be akin to the devil. The outward solicitations to evil are not so imperious there. The spirit of cupidity and gain rages in the country, but as competitions are not so sharply defined, and the clashings of self interest so fierce and hotly contested as in the city, the torrent is less apt to sweep you away. In the city the spirit of avarice is intensified into a furnace heat. The only problem seems to be how to make the most money in the shortest time. If conscience should stray out of the Sabbath and get in the way, it must be run over. Hence you may pass across the diameter of the city and scarcely see anything to remind you of God and eternal things, unless it be the passing of a funeral cortege, casting its silent and transient lesson upon the hurrying scene. There is certainly more danger of men being wrecked upon these wild social breakers than those who are further out upon a calmer sea In the city the incentives to jovial vice, amorous and dissolute pleasures, and wasteful indulgences are tricked out in their most showy and witching costumes. Even the fine arts, poetry, music, painting, wit and beauty all combine to give a picturesque charm to the broad road, and conceal the dismal abyss in which it terminates. Now, you who live in the country are not drummed and serenaded by the devil in this way. Fewer temptations stray into the country and prowl among the fields, and therefore we naturally expect to find more virtue and temperance in the rural home. Then, again, the dwellers in the country are not so much annoyed by those little cares and frets that disturb the equanimity of city people. You have no city taxes to pay. You are not worried by butchers' bills, gas bills, water bills and rent bills every day. Mother Grundy's eye is not upon you every time you step out of the gate. There is no water or chalk in your milk. Your butter is not strong enough to walk. Your fruits and vegetables are always fresh and savory. You have your local cares and troubles, I know. It is very aggravating to have your crops damaged by breechy cattle, or the dogs to get among your sheep, but on the whole, there is no mode of life so conducive to a serene, happy and contented existence as the farmer.

And now let me exhort you to magnify your calling. It may be made the school of some of the noblest and most amiable virtues that can adorn humanity. No clan is so independent and free. The financial storms that topple down the great commercial houses that stand on the contingencies of trade do not desolate your quiet so severely.

Remember that agriculture is the chief source of the nation's wealth. Commerce exchanges it. Manufactures only improve its quality. But agriculture is the productive power that multiplies it. Without the farmer the loom would stand idle, the mill cease to hum, the locomotive rust on the iron rail and the great ships drop to pieces in the harbor. Without agriculture, in fact, these great symbols of utilitarian invention and activity could never have come into existence.

Agriculture fosters the patriotic spirit. The fee simple to a spot of ground is the germ of liberty. The man who stands upon his own soil feels that his personal interest is bound up in the honor and inviolability of the law that protects him. He feels that of the great globe, fashioned by the hand of God and sent wheeling through boundless space, a certain portion is his, from the centre to the stars; and this consciousness of independence kindles the love of freedom.

And let we also congratulate this society on the stability agriculture

is giving to the population of this State. The first exodus of emigrants came for gold, with no settled purpose of staying here. They were nomadic, restless, living in tents, wandering along river courses, clambering up the mountain slopes, and diving in dismal cañons and gulches, and when they had found the coveted booty, hurried back home. Thus for years the wealth of the State flowed steadily out of the Golden Gate into the Eastern market, returning no equivalent. You have perhaps heard of the "laying machine" invented and patented by a live Yankee. It was so constructed that the egg dropped through the nest into a pocket below, out of sight, and the hen, failing to find it, concluding she had made a mistake, went to work to lay another, and so on; but it was soon found out that, however profitable the machine was to the owner, it was very hard on the hen. The steady outflow of gold may have been very gratifying to Eastern and European capitalists, but it was very hard on California The discovery of the agricultural resources of the State has changed this state of things, by giving permanency to the population, and hence turning capital towards us instead of away from us.

You live in a remarkable State, stretching itself over ten degrees of latitude, washed on one side by the sea, and walled on the other by mountain ranges. Where on earth will you find more generous soil, a greater variety of climate, grander scenery, richer deposits of minerals, a more salubrious atmosphere, and orchards and gardens teeming with every variety of temperate and tropical fruits and flowers. All this natural wealth and beauty has been brought to within a few hours of the East by the recent completion of the continental railroad. Before your Pacific front stands the nations of the Old World throwing open their harbors and markets. It remains with the farmers, more than any other class, to say whether we are worthy to possess this goodly land, and to lay broad and deep, upon God, humanity and conscience, the foundation of this new State. Whether our schools, colleges, churches and industrial institutes shall be cherished by so enlightened a liberality as to become a joy and benefaction to posterity. Whether, in short, a race of men can be developed here whose moral and intellectual worth will be commensurate with the products of this genial soil and sky.

PROCEEDINGS

OF THE

UPPER SACRAMENTO AGRICULTURAL SOCIETY

FOR 1869.

OFFICE UPPER SACRAMENTO AGRICULTURAL SOCIETY,
Pavilion, Chico, December 27th, 1869.

I. N. Hoag, for the State Board of Agriculture:

DEAR SIR: Your letter of November seventeenth to General Bidwell, President of this association, requesting information in regard to the proceedings of the society for the present year, has been referred to me, and I have the honor to transmit the following statements:

Our society was organized in eighteen hundred and sixty-seven, as the Butte County Agricultural Society, and held a fair that season, which proved very successful, particularly when the short time for preparation and the total inexperience of all concerned in the management are considered.

Another fair was held by the society in eighteen hundred and sixty-eight, which was well attended, but which, from various causes, did not prove as great a financial success.

At the annual meeting of eighteen hundred and sixty-nine, the society was reorganized under the present name, and the field of its operations extended to embrace the Counties of Butte, Colusa, Plumas, Tehama, Shasta and Lassen, and a Board of Agriculture elected as follows:

President—J. Bidwell.

Vice Presidents—W. N. De Haven, S. M. Sproul, G. C. Perkins, C. L. Wilson.

Treasurer—J. C. Noonan.

Secretary—E. Hallet.

Directors—M. Biggs, D. M. Reavis, J. L. Keefer, J. C. Mandeville, G. F. Nourse, J. J. Morehead, W. P. Tilden, W. F. Cheney, B. F. Allen, J. Thompson, S. T. Brewster, G. W. Hoag, J. Boggs, J. Billion, J. C. Tyler, H. A. Rawson, G. H. Messersmith, H. B. Sheldon, J. J. Bell, G. I. Taggart, A. W. Heitzig.

It being already evident that we had a season of light crops and low prices, with the resulting financial pressure to contend with, it became a matter of very serious discussion whether it was policy to hold a fair this season; but it was finally decided to attempt it, and the inclosed

premium list, offering sixteen hundred and fifty dollars, and speed programme, amounting to fourteen hundred dollars (to which was afterwards added another purse of one hundred and fifty dollars), was published and widely circulated.

The fairs of preceding years having been held in temporary buildings, it was decided to build a permanent Pavilion, and one was erected, eighty feet by ninety-six feet, at a cost of about four thousand five hundred dollars, on a block of land in Chico, donated to the society by General J. Bidwell.

The fair held from September twenty-eighth to October second was very successful—a show of stock not excelled by any district society in the State, and a display of produce, fruit, vegetables and manufactures that filled the Pavilion.

The following is a summary of the entries of leading animals and articles:

Horses—Thoroughbred	17
Roadsters	26
Draught	5
Of all work	73
Saddle	8
Mules	7
Jacks	5
Cattle—Thoroughbred	15
Grades	13
Sheep—Thoroughbred	28
Grades	25
Goats—Cashmere or Angora	8
Swine	9
Poultry	11
Whole number entries of stock	250
Produce	89
Produce—Manufactured	124
Manufactured articles	49
Mining products	7
Cabinet minerals	1
Agricultural implements	18
Needle and fancy work	194
Works of art	36
Miscellaneous	32
Whole number	550

The larger part of the animals on exhibition were the best stock in the State, of their respective varieties, many of them having taken premiums at the State and Northern District Fairs.

In addition to the articles for which premiums were offered by the society were fine exhibits of silkworms and cocoons, by Messrs. J. Siebert, of Marysville, and A. P. Smith, of Sacramento; woollen goods,

from the Capital and Marysville mills; a lace robe, by Mrs. Roberts, intended as a present to Miss Nellie Grant, and many other articles.

I inclose the opening address of the President. The annual address, by Hon. George Barstow, we have already published, and forwarded you a copy.

The financial condition of the society is healthy. We were forced to incur a small debt in building, but hold property to more than twice the amount.

Hereafter, with the railroad facilities now nearly approaching completion, the heavy expense of building partially met, the public interest generally aroused, and the aid of the experience of the past, we trust, within a reasonable time, to make our annual fairs an attraction to all who take an interest in agriculture and its kindred arts; and who does not?

Very respectfully, your obedient servant,

E. HALLET,
Secretary.

OPENING ADDRESS.

DELIVERED BEFORE THE UPPER SACRAMENTO AGRICULTURAL SOCIETY, SEPTEMBER TWENTY-SIXTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By General JOHN BIDWELL, President.

Members of the Upper Sacramento Agricultural Society, and Ladies and Gentlemen: On occasions like this it is customary, as you are aware, for the presiding officer to deliver an opening address, dilating upon the importance of agriculture and portraying in glowing terms the resources of the country, present and prospective; but I have neither time nor inclination to enter upon, much less perform such a task; nor do I believe that you, under the circumstances, desire such at my hands.

Officers of an agricultural society, if they discharge their duties as they should, occupy anything but sinecure positions. No amount of smooth words, or lazy good humor, or self-laudation will suffice to fill the chasm of inefficiency. They must work—that is the word, work—and triumph or fall by their work. Active, earnest, efficient work knows no such word as fail. And, my friends, it is a glorious circumstance that we live in an age of universal activity—in a country of liberty and progress, where it is no disgrace to toil. We should recognize labor as the foundation of prosperity; and no man can plead as an excuse that it is not honorable to work; but all ought to work, with hands or head, people and officers alike. It is not enough for members of such a society to elect officers, resolve to hold a fair, and then fold their arms and say all is done. But, pardon the comparison of small with great things, how long would our government, or any other free government, last without the active sympathy and support of the people? Expenses must be paid, and moral and material forces brought into requisition. The life of a society like this, as that of a nation, depends on the existence and efficiency of these essential conditions. When a government or society is organized, it has but just begun its career. Sympathy and material support are its vital atmosphere. As "eternal vigilance is the price of liberty," so is earnest and ceaseless effort the price of success.

For the two preceding years, the local or Butte County Agricultural Fairs were temporarily provided with a structure dignified with the name of Pavilion. The plan of annually building up and tearing down was deemed by the present officers unwise and not to be continued. It was believed that prominent and enterprising citizens of adjoining counties would come to our aid and do much to promote the object and

success of the annual exhibition (which we have come here to celebrate) and share equally with us in the beneficent results sure to flow from the exchange of happy greetings and peaceful rivalry. With these views and objects, it was but fair to give the citizens of other counties equal rights and representation. To this end it became necessary to reorganize and merge into a district organization, under the name of the "Upper Sacramento Agricultural Society," embracing the Counties of Butte, Colusa, Tehama, Shasta, Plumas and Lassen, and such others as may unite with us in the future. This accomplished, an appeal was made for means to erect a structure which should be of ample proportions to answer the present and prospective wants of the society; a building which could be so far advanced, with the means we might reasonably expect, as to answer the purposes of the present fair; one that could, when the financial condition of the society should permit, be appropriately finished.

A firm brick foundation, three feet high—eighty by ninety-six feet—with two cross walls, was laid, and a substantial frame erected thereon. The outside boarding, though substantial, is temporary; but the floor and roof may be considered good and permanent. But further description is unnecessary. Without drawing somewhat upon your imaginations you may not be able to form a proper conception of this now unfinished edifice when it shall have been completed. But draw upon your fancy as you may—picture to yourselves this temple of industry, surmounted with cupola or dome, embowered amidst stately trees; this vast aisle and transept arched and groined, and these walls decorated with mottoes and allegorical frescoes—all these things and more are within the possibilities of the near future, if the people will that they shall be done, and furnish the means. Industry, and rivalry and development—these will secure all that we need, and satisfy our fondest hopes. In attempting to make these allusions—this sort of general and imperfect report of the doings of this society, let me say, the work itself is the best witness as to what we have done. Whether or not it meets with the intelligent expectation of those who have a right to call us to account, I can conscientiously say it is all we have been able to do. We present it to you as the result of your willing contributions, and trust that you will find in it something worthy of your approbation. We are here to exchange kindly greetings, and celebrate our annual jubilee; and we have reason to rejoice and return thanks to a gracious Providence, who has crowned the land with abundant harvests, and filled our hearts with gladness. We are here, my friends, in the interest of labor, of harmony and good will, and of all that makes us a prosperous and progressive people, to dedicate this hall to agriculture. It rose at your command; it is filled with the products of your industry. Accept it at our hands, and make this occasion one of sincere rejoicing. And more than that—make it a season of profit as well as pleasure, that all may be able to say, when they shall return to their homes, that it was good to have been here; that they feel encouraged, and their ambition aroused, to excel in their various callings. It is an auspicious indication to see the growing interest felt in these annual exhibitions. It is in your power to make them occasions not only of happy reunions, but of lasting benefit to all; and it is hard to imagine how any can return from here without feeling amply recompensed. If, however, there is a son of Adam so buried in avarice, so fascinated with the bubbles and frivolities of idleness—in a word, so lost to the finer sensibilities of his nature, as not to feel the kindling power of emulation—his

case is one of commiseration; he is, indeed, a drone in the hive of industry. But if one spark of genuine humanity is left in his bosom, there is hope—hope that the spark may become ignited into a flame—hope that he will resolve to add his mite to the sum of activity, which carries the country forward in its career of prosperity, and annually return to compete in the race of merit, where excellence alone should win the prize. No man is so wise that he cannot learn; none so high as not to be dependent on his neighbors; none so rich that he cannot be taught economy; none so prosperous that he may not be benefited by the knowledge and experience of other men; none so humble that he may not rise.

It may be proper to allude to one or two obstacles to the completeness of the exhibition the present year. The season for fruit has not been favorable. In comparison with former years, grapes have been almost a failure; and the same may be said of most products of the orchard. The failure has been both in quantity and quality of the fruit, owing, doubtless, to the small amount of rain last winter and spring, and the few days of unusually hot weather in July. Another effect or peculiarity of the season has been: fruits ripened and disappeared a month earlier than ever before, within the memory of the oldest inhabitant.

I may be pardoned, perhaps, for making one more excuse and counting it among the obstacles against which we have had to contend, and that is, the stringency of the money market, which is without parallel. The land is groaning with plenty, but amidst this abundance every man feels poor. One thing is evident, there is no available and adequate market for farm products. Look at your granaries, they are literally bursting with the staff of life. Look at the banks of the Sacramento, they are barricaded with grain awaiting shipment. There is, in this state of affairs, no sufficient circulating medium. Importations carry away all the gold and silver, and there is nothing left with which to transact business. From what source are we to find relief? I do not pretend to comprehend the intricacies of financial strategy by which a few men rule the entire Pacific coast. One thing is clear—a crisis is upon us. The most apathetic must feel it. The year eighteen hundred and sixty-nine has been made memorable by the completion of the great transcontinental railway, and we are suddenly brought into more intimate relations with the Atlantic States and Europe. The mystery and romance of our isolation have been snatched away and we now stand face to face with the world.

In this changed condition of affairs, what is to be done? Fold our arms and wait for something to turn up? I answer, by no means. To me the solution of the problem seems not difficult; but it may be more readily said than done. We must compete, and competition means labor. Look at the vast array of our importations. We must either go to manufacturing or continue to export the precious metals. It now takes all our gold and silver, as soon as they are dug from the ground, and a considerable portion of our agricultural products, to pay for what we consume and wear out, a very considerable proportion of which, sufficient, in my judgment, to relieve this coast from the very embarrassments we now suffer, can, and by every consideration of wise policy or local pride, should be manufactured in this State. But I have no time to enter into detail or speculation. Look at the vast—aye, unlimited water power of the Pacific coast! Consider this mild and salubrious climate! See the exhaustless fountain of cheap labor in China and Japan. Cannot these advantages be made to avail us anything? I tell

you, my friends, that if we remain inert and fail to grasp the logic of this new order of things, our prestige is gone—business must languish—our prosperity deferred It is not necessary to dive into the severe logic of political economists; Adam Smith and John Stuart Mill may be laid on the shelf. Let capitalists begin at once, and spend in the next two years as much in building up manufactures as they have in the past two years in wild and fruitless speculations in mines, and, my word for it, such an impetus to permanent prosperity would be given as to be wholly without parallel in the history of the State. Reduce, as fast as practicable, the importations, and you will have enough gold to fill every man's pocket; every man who shall, by his industry, deserve it, will be sure to have it.

Wait and hope, and speculate as we may, I do not believe that real and permanent prosperity will dawn upon us until we become, to a considerable extent, a manufacturing as well as agricultural and mining State. We are at too great a distance from the principal grain markets of the world to make our wheat take the place of gold, except in times of famine or great scarcity abroad.

According to *The Commercial Herald and Market Review*, a paper published in San Francisco, there were bound to that port, on the seventeenth of this month, no less than one hundred and thirty-nine vessels. Of these, thirty-four were from New York, seven from Boston, twenty-seven from Liverpool, sixteen from Australia, etc. Now, what are these vessels bringing to exchange for your gold? The first thing I notice is five hundred and seventy-five barrels of alcohol, because it begins with A. But looking down the list I find six thousand six hundred and thirty-five barrels of whiskey; or, reckoning each barrel at forty gallons, two hundred and sixty-five thousand four hundred gallons; this at two dollars per gallon (I believe the article rates at about that figure) amounts to more than half a million of dollars. Do not imagine this is all the whiskey consumed on this coast; by no means. This item of half a million of dollars worth is simply what is on the way here at this particular time to make up the deficiency; it has nothing to do with the magnificent operations of manufacturing whiskey and brandy in California. So much for that. Next are four thousand seven hundred hogsheads of coal; also, seven thousand two hundred and eighty-three tons of the same. These are probably a necessity, like many other things. But what about four thousand one hundred and seventy-three packages of boots and shoes? Our hills and plains are covered with cattle, and still hundreds of thousands of dollars must be sent away to pay for boots and shoes. Gold is the only thing, as a rule, which they will take in exchange. And what next? Fifty-four thousand four hundred and seventeen boxes of candles! In this land of verdure and sunshine, where domestic animals live in winter as well as summer on spontaneous pasture; where the very clouds drop fatness all over the land; can we not, ought we not, I ask, manufacture our own candles? Next, thirteen thousand three hundred and forty-six boxes of soap; also, thirty-eight thousand one hundred and seventy-three casks, kegs, cases and packages of pickles, preserves, etc. But I cannot specify; the list is too great. I am aware that the vessels bringing these things to us will take away some wheat—four to eight millions of dollars worth perhaps, during the entire year, provided they can get it at low figures, so low as to be ruin to the producer. But it takes all our gold, besides,

to pay the balance against us; and here, where our currency is gold, gold we must have or all business will languish and die. But there is no need of discouragement if we will but seize the reins and put the car in motion. Do not understand me that manufactures are the only desideratum. We want combination and co-operation of enterprise. Agriculture must be better and more varied, to embrace everything within the range of our unequalled and diversified soil and climate. Mining should be carried on with more intelligent economy and better comparative results. All the parts of the industrial resources of the country should come into play, for they are all necessary to make the sum of that prosperity which awaits our bidding. These exhibitions of peaceful rivalry are just what we need to stimulate us to greater and greater results. They are the fruit of industry and measure the length and breadth and depth of enterprise. They should therefore receive at our hands all due encouragement, that may show us to be a people worthy our name and pretensions; free, enlightened, refined, progressive.

Before closing, I beg leave to say to those who are here from a distance, we are glad to see you and feel honored by your presence. We are aware of the inconveniences inseparably connected with the sojourn of a large number of people in a small town. But I sincerely trust there will be no such thing as extortion or other cause of complaint. The people of Chico will, I believe, do all in their power to render the stay of their visitors agreeable. I must not omit to express the thankfulness of this society to those whole-souled, liberal-minded citizens of this and adjacent counties, who have in our time of need so generously lent us a helping hand.

The ladies, whose kind and timely assistance was so acceptable in decorating this hall, have our special thanks. Finally, to one and all, ladies, gentlemen and children who grace the occasion by your presence, I greet you in the name of our society with a sincere and heartfelt welcome. Good night.

AGRICULTURAL ADDRESS.

DELIVERED BEFORE THE UPPER SACRAMENTO AGRICULTURAL SOCIETY, AT CHICO, SEPTEMBER THIRTIETH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Hon. GEO. BARSTOW.

Ladies and Gentlemen: We are assembled in one of the largest valleys of California, surrounded by the products of the field, the orchard and the vineyard, and by the increase of the flocks and herds, to consider how best we can improve the gifts of all-bounteous Nature.

THE MODERN FARMER.

The peasant farmer of one hundred years ago, for whom it was enough to eat and drink, who lay down upon his bed of rushes in perfect contentment, while the busy housewife spun and wove the fustian in which he was dressed; who cut down the oak of the forest to warm himself, and, mounted upon his strange lumbering vehicle, was jolted once a year to the village fair—that being nowhere exists in America. His portrait is a picture of the past. The farmer of to-day is another creature. He thinks for himself. He has a part in the government of his country. He uses agricultural chemistry. It is not enough that he has sheep, he must have the best breeds, blooded horses, oxen—the sight of which, in a California landscape, gives him a better picture than Flemish artist ever drew.

MODERN AGRICULTURE.

The ceaseless new wants which modern civilization has evoked, make it necessary for the farmer to exchange his products for furniture, for home comforts, for new implements of husbandry, for money. He must have the threshing machine, McCormick's reaper, and the header. It is not enough to grow the grain. Without exchange, his crops cannot bring him even the appliances of productive, wonder-working modern agriculture. This involves the necessity of a good market, and for that commerce comes in, to play her part in this grand drama of nature and art—culminating in the model farm and the perfect farmer. The railroad, the mighty steamship, the telegraph are called for; the canals that unite the seas, all the vast enterprise of foreign countries, become agents and helps; but chiefly the power of multiplying products and the means of transportation within our own borders, are the needs of California to-day—and hence I have chosen "Internal Improvements" as the most fitting theme for this occasion.

SAN FRANCISCO BAY AND CITY.

The first advantage necessary for building up an opulent and powerful State, is, that its chief commercial city, its central business, shall be located in a commanding position and in a healthful climate. Behold then, the commercial centre of California, San Francisco, seated by a gate, which is named the "Golden" by spontaneous agreement of mankind, from suggestion of the profit that goes through it, landward and seaward. That gate is but a channel scooped out by Omnipotent power, through the vast range of mountains, to make a way for the waters of the ocean to roll through and spread themselves out into a deep broad bay, the Bay of San Francisco. That bay is nothing but one vast harbor, and there, sheltered behind the protecting barriers of the mountains, the navies of the world may ride at anchor. By such a bay, with such a harbor, at such a gate and so sheltered, stands San Francisco—the centre and outlet of commerce on the western side of this continent—connected by rivers and inlets with hundreds of valleys that pour down their streams of trade into it, reaching far up into the plains and mountain passes, and laying them all under tribute, by the natural laws of necessity and convenience; a city with no rival on thousands of miles of sea coast, and prospectively the peer of any city on the globe.

CLIMATE AND TEMPERATURE.

Think of a great commercial city with a climate of which it may be said with truth that there is never a cold day and never a hot one—where, but for mechanical and culinary purposes, fire is never an actual necessity—where, through all the days of the year the open air is a stimulating luxury, and all the nights are fitted for the most refreshing and health-giving repose. Such is the climate of San Francisco, and the advantage it affords to man in enabling him to toil without the enervation of heat or the pinching power of cold, is incalculable. See with how much less physical exhaustion business is transacted and labor performed than in cities where the force of great heat or intense cold, by imposing an immense tax upon all the physical energies of man, enfeebles him and shortens his existence.

TEMPERATURE OF THE COUNTRY.

Turn now from the city to the country. Think of a State with eight hundred miles of sea coast; with a temperature in which the cereals arrive at perfection, the fruits and flowers of the tropics thrive, and all the garden vegetables of northern latitudes flourish. Calculate the advantages of a country where flocks and herds require no expensive guarding against summer's heat or winter's cold. Such is the climate of California.

VARIETY OF PRODUCTS.

Look next beneath the ground, where Nature has stored up wealth in exhaustless magazines of gold and silver. From the mines look abroad upon the vintage, now at its height; in the warm districts the wine already made, in the cooler valleys the wine presses now at work. Look next at the fields, where the yellow stubble gives evidence that the harvest has been gathered. Count the ships that go out daily to waft the surplus to the crowded inhabitants of the old world. We are so accus-

tomed to think of California as only a gold-bearing State that we can hardly realize the fact that, in the production of wheat for export, she is the equal of States which export almost nothing else. Twenty years ago who would have believed that to-day her production of wine, silk, wool and breadstuffs would entirely eclipse her products of gold; and who would believe me if I should to-day predict that, in far less than twenty years from this time, the manufactures of San Francisco will exceed the products of California gold? In the department of small fruits, how real and varied does the producing capacity of the State become to our minds when we consider that the importation of lemons, oranges, figs, limes, olives, shelled and dried fruits into the United States, annually, amounts to ten millions of dollars, and that each one of these articles can be grown with ease in California. How actual and real becomes that beautiful source of wealth, the silk culture, when we find that at the State Fair, just held at Sacramento, there were exhibited samples of more than four millions of cocoons which have been produced here, and of over a hundred thousand mulberry trees growing in California. Here is the infancy of a culture which has enriched China, Japan and Italy by millions of dollars annually. The importation of silks annually from those lands into the United States swells to a sum which would hardly be believed if I should state it here; but I may say that every year we send away cargoes of silver dollars to pay for silks grown on foreign soil and consumed in our country. California promises to assist, ere long, in checking that drain upon the wealth of the nation.

The tea culture in this State, formerly considered a vision, has become real, by the purchase of two thousand acres of land in El Dorado County by a party of Japanese, who are now occupied there in rearing the tea plant. How vivid the wheat culture of the State becomes to the mind's eye, from the single fact stated in the *Alta California* that, on the first day of August, fifty thousand tons of wheat, in sacks, waiting for shipment, were stretched along the banks of the Sacramento River, in the Counties of Tehama, Butte, Sutter, Colusa and Yolo, and that sixty thousand tons more were to follow them, making one hundred and ten thousand tons of wheat as the yield of five counties. Observe, also, that five years ago the land from Yolo to Vallejo—fifty-six miles—was unproductive and almost uninhabited. Now it is an almost continuous wheat field. A railroad company has laid its track through that route, and is sending two wheat trains per day, one every night, and extra trains on Sunday. For miles along the track the wheat is piled up in sacks, waiting for shipment, and more than forty thousand tons have been shipped this year from Vallejo direct to Liverpool. Note also the fact that a million and a half of orange and lemon trees are to be set out this year, by one fruit association, upon a farm of six thousand acres, in the County of San Bernardino, and that the same farm is adapted to the fig, olive, banana, grape, pine apple, almond, filbert, walnut, chestnut and cocoanut. Here is a fact of the greatest significance, as showing the varied capacity of the State for producing in that department of culture, which we consider as but collateral and secondary to the great staples.

THE CHICO FAIR GROUNDS.

But we need not look so far away. Here, upon these fair grounds, to-day, there has been an exhibition of stock which shows that the farmers of California have an ambition that will stop at nothing short of perfection, and that is a kind of insurance effected upon the agricul-

tural prosperity of the State. We have seen many specimens of those breeds of horses most famous in England and America; the goats of Cashmere; the finest specimens of Merino, Cotswold and Southdown sheep; the most celebrated breeds of cattle, and among them one suspected of being that queen of the dairy, the Holstein cow. Add to this that here, in this town, which is but an infant in years, the large Pavilion in which we are now assembled has been erected in the interest of agriculture, and is to remain a permanent institution in the district.

RAILROADS.

In view of the vast productiveness of the lands of California, and the extension of farming, it is clear that we need more railroad transportation; the land waits for railroads, canals and labor. What a glorious event was the completion of the trans-continental railroad! What amazing energy marked its execution! What astonishing rapidity! Who will not honor the men who carried it through? Who will grudge them their subsidies? But this work, great as it is, should be but the incentive to others. What we want is a network of railroads connecting the Pacific country with San Francisco, like that which connects the whole of New England with the City of Boston; so much so, that from early morn to nightfall in that city, there is not a single quarter of an hour that does not witness the arrival or departure of some railroad train. What a magnificent result is this of the enterprise of New Englanders; and are not the men of New England here? See also the railroad connexion of the whole West with Chicago; and are not the men of the West here? And yet again see how the whole country east of the Mississippi is bound by iron links to the City of New York. And this is what we must have here to connect the Pacific country with the New York of the Pacific. A man is more isolated from San Francisco at Half-moon Bay, than at Gilroy, although it is but thirty miles to Half-moon Bay, while it is eighty to Gilroy; but he goes to Gilroy by the iron horse, and to Half-moon Bay by the flesh horse. By means of the trans-continental, we are nearer to Philadelphia and Baltimore than to some places in our County of San Bernardino; because we measure distances now, not by miles, but by the means of transportation; and by the same rule, Canton, Shanghai and Yokohama are near neighbors of New York and Boston. Great as the trans-continental railroad is—and it is a great work—the aid extended to it by our Government was by no means unexampled or extraordinary.

ENGLISH RAILROADS IN INDIA.

Great Britain has signalized her dominion in India by the construction of a continuous line of railroad from Calcutta to Bombay, a distance of one thousand four hundred and fifty-eight miles, and when this and the Indian Peninsula line, which has more than fifteen hundred miles in operation, shall be completed, with their various branches already projected, England will have four thousand six hundred miles of railroad in operation in India, and will have extended Government aid to them to the amount of four hundred millions of dollars. Our great railroad cost but one hundred millions.

TULARE VALLEY.

There lies not very far from here the great Tulare Valley—the grand untamed Eden of this continent. Let a railroad connect it with San

Francisco or Stockton, and there will be no need of a feverish White Pine excitement to fill it with people and make it resound with the cheerful toil of thousands of farmers. They in turn would load that road with countless tons of wheat. Commerce would freight her ships with it. Merchants would barter for it. Bankers would make advances upon it. Labor would be demanded at every stage of its growth and its handling; and thus it would contribute in some degree to make the State and the nation broader and stronger in their foundation and their upbuilding.

IRRIGATION.

Next to railroads we want canals for irrigation, but constructed with sufficient depth to make them navigable. We may say in general terms of the seasons of California, that they are two, one of copious moisture, commencing on the first of November and closing on the first of May; the other is rainless and extends from the first of May to the first of November. Could we moisten the earth during these last six months, the productiveness of the State would be absolutely without limit. Many rich mines have been opened in California, and their harvest of gold, by lubricating the machinery of manufacturing and commercial industry, has enriched the world. But no country has profited by it so little as the State which produced it. There yet remains one mine, however, richer than Ophir, exhaustless as the sea, the treasures of which are in store for the people of California whenever they choose to appropriate them. I mean the melting snow of the Sierra Nevada Mountains, which the suns of summer send down in fertilizing streams upon the arid plains. We have but to utilize them to find them a source of boundless wealth The practice of irrigation is coeval with history. It has existed in every country, though much less in the United States than elsewhere. It was one of the earliest arts practiced by man. The scientific press of England, in view of the late droughts there, is telling the people that, even under the conditions of an English climate, which is one of extreme moisture, the most profitable use of the surplus water in their running streams would be to apply it to irrigation. Italy, with a climate as moist as that of the Middle States of the Union, with its annual rainfall, as well distributed through the summer and winter months, has applied the drainage of the Alps and the Appenines to the irrigation of a million of acres, and has developed there a new agriculture to such an extent, that a hundred millions of dollars would not purchase the surrender of its benefits. It is a fact, too, that the rental as well as the product of the irrigated lands exceeds that of the dry culture, and in some places amounts to a very large sum per acre. Thus far I have spoken of countries which I have seen. Old canals for irrigation, repaired and enlarged by the English in India, and new ones built by them for irrigation, combined with navigation, are numerous, and are measured by thousands of miles. One of them, a work purely English in design and execution, and of modern date, the great canal of the Ganges, with its branches navigable by steamers through a thousand miles, irrigates more than a million and a half of acres. The officers of the East Indian service are pressing upon English capitalists the further extension of the canals, not only as important to the commercial prosperity of the country, but as a chance for profitable investment. Along the foot of the Cordilleras, in the rainless western slope of South America, lands have been kept moist by irrigation for more than a hundred years. In Spain English capital is building the canal of

Jenares; and the engineer mentions it as a fact of great importance, that while the average of population of Spain is only eighty-one to the square mile, the population in one section of irrigated gardens rises to one thousand six hundred and eighty-one to the square mile; and in another section, to seven hundred and sixty-seven; and he reports it as a well established fact, that crops raised upon lands judiciously irrigated are of better quality and in greater quantity than those produced by dry culture.

The great need of California now is an opportunity for diversified crops, ever green and ever growing, to include the grasses of the Eastern States, for hay, which, in the opinion of scientific men as well as practical farmers, will flourish here by irrigation, and never will without it.

The marvellous productiveness of the soil of California has excited the wonder of the world, even more than its abundant yield of gold. Our rainless summer of six months is the only great drawback upon our agriculture upon the plains; and I know no way of arresting the deterioration of their overcropped soil when long cultivated, and of preserving forever the native fertility of that portion of it which has not come under the plough, except by the free use of water, loaded, as the melting snows of the mountains always are, with fertilizing matter from decaying vegetation and decomposing rocks. It is more lasting in its effects than the artificial composts which are now so much employed in the agriculture of other countries, and which can be applied with safety in California only in connection with water. The primary object of artificial irrigation is to supply to the soil the requisite of moisture, in which the climate is in some countries occasionally, and in others, like California, periodically deficient; and as thorough drainage is a condition of the improved culture which follows it, lands which are prepared for irrigation are better protected against the excess of wet as well as drought, than similar lands under the dry culture. With a system of works, properly planned and executed, for the irrigation of the great plains of California, she would be relieved from a great portion of the loss sustained in floods like eighteen hundred and sixty-one and eighteen hundred and sixty-two and droughts like eighteen hundred and sixty-three and eighteen hundred and sixty-four.

WATER RIGHTS.

The right to withdraw water from a stream and apply it to irrigation requires a grant from the sovereign, and in older countries is generally obtained by purchase at high prices. The State of California permits her citizens to appropriate the waters of streams, not navigable under an implied grant, without application for it and without charge. This appropriation, which consists in the exercise of due diligence in the building of the necessary canals for its conveyance, and the condition of its application to useful purposes, invests the appropriator with the first right to the use of the water, and the continuance of that right unless he abandons it; and thus it becomes a species of property, the value of which, prospectively, if not at present, may be inferred from the price lately fixed by the Government of Spain upon waters supplied to the Jenares Canal. The area of land to be irrigated by it is twenty-seven thousand one hundred and seventy acres, and the quantity of water utilized for the purpose is one hundred and seventy-five cubic feet per second. The price charged by the Government is one thousand eight

hundred and seventy-five dollars per annum for the flow of one cubic foot per second. The constant flow of this quantity per second is there estimated to irrigate one hundred and fifty-five acres. The price of the water upon entering the canal, which is the price paid to the sovereign, is about twelve dollars per acre per annum; and the cost paid to the canal for delivery of the water upon the land is about twelve dollars more.

There is no country in which irrigation can be more easily applied, nor, if we except India, upon so grand a scale as in California. A survey already made demonstates the practicability of watering more than three quarters of a million of acres on the right bank of the Sacramento River, by a canal issuing from that stream near Red Bluff, leading along the outward edge of the valley, and having its outlet at Suisun, and it is probable that the drainage of the Coast Range of mountains would swell the irrigating capacity of that canal to one million of acres. Large as this area is, a still larger area can be irrigated from collecting in a canal the streams heading in the Sierras, and flowing into the wide plain on the left bank of the Sacramento, and the vast basins of the San Joaquin and Tulare. The last named could be gathered into a deep and navigable canal, having its head in Kern River and Tulare Lake, and its outlet in or near the Bay of San Francisco; and the first named waters would need a canal pointing westward. The areas here named, if subjected to an irrigation like that of Italy and parts of India, with its superior advantages of climate and fertility, would yield to the commerce of this State a contribution of almost incalculable value.

SALT LAKE VALLEY.

When the traveller halts in the streets of Salt Lake City, as I did on the nineteenth of June, eighteen hundred and sixty-nine, he finds that it is laid out into one hundred and eighty blocks, of ten acres each, with avenues between them all, of one hundred and thirty feet in width. He has read the facts of its climate, and knows that there is not rain fall enough in Utah to ripen any of the crops on which man depends for subsistence. He observes, however, that the gardens blossom, and fill the air with fragrance; that vegetation is thrifty and green; that the orchards are loaded with fruit; and around the city, and stretching off in the distance far away, are fields of grain and barns filled with plenty. He sees that the streets are lined with rows of trees, in which choirs of birds appear to assemble to sing their songs. He listens, and discovers that there is mingled with the music of the birds the sound of rippling water. He now perceives that there is a crystal stream coursing its way through every street, and making, by outlets, the circuit of every garden. The bloom and fragrance there are no longer a mystery. On returning from the city by the stage coach, twenty-eight miles, to the railroad, he crosses more than fifty streams of running water, some of which have made the circuit of wheat fields in artificial conduits, and are hurrying their surplus waters down the valley to the Great Salt Lake, which lies at a little distance below, and in plain sight of the city. He lifts up his eyes and sees, far in the distance, where the Almighty has bended the noble range of Wasatch Mountains, like a bow, round the two sides of the valley in which the hive-like city and sweet fields lie embosomed. Though it is midsummer, the snows

yet linger upon their summit, slowly dissolving in the sun, and trickling down their sides in a thousand rills, which are gathered into artificial channels upon the plains below. He now discovers how it is that a hundred thousand Mormons, by tireless industry, in a country where rain seldom falls, have produced the most blooming and beautiful agriculture west of the Mississippi River. It is done by the process of irrigation.

THE SUEZ CANAL.

The world is full of enterprise for material development on the grandest scale, and what I have referred to as needed in California are not more than commensurate with our resources and our destiny. We see, for example, the Suez Canal, now being urged forward by the French engineer, Lesseps, and the contractor, Levallier. That is indeed a great undertaking. It is nothing less than the connecting of the Mediterranean and Red Seas by a canal which is in itself almost a sea, for it is one hundred miles in length, three hundred feet in width, thirty-five in depth, and is nowhere crossed by any bridge or interrupted by locks. To urge on this work, twenty thousand workmen ply their implements, and forty steam engines strain at the vast weights of earth raised along its bed. Fourteen years these tremendous forces of men and machinery have been employed, and this year Europe, Asia and Africa are to unite in celebrating its completion. It cost eighty millions of dollars, and forms part of the route which will compete with our trans-continental route for the carrying of merchandise from the ports of China to London and New York. Had Sir John Franklin lived at this day, his precious life would not have been imperilled to realize the traditionary dream of a northwest passage to India. Two routes now lie open to Indian commerce—the eastern by Suez, and the western by our trans-continental railroad—either of which is infinitely preferable to a route through polar seas, open at best but two months in the year, and even then liable to be impeded by fields of floating ice.

THE DARIEN CANAL.

Far to the southward of us lies that narrow neck of land, the Isthmus of Darien, the scene of one of the greatest of human enterprises, thought of but not accomplished. It is the opening of a ship canal across that Isthmus to connect the Atlantic and Pacific oceans.

LAKE MICHIGAN AND MISSISSIPPI CANAL.

While we are pausing before obstacles in the way of this work, behold towards the north, rising in vast conception before the mind, the monster project of a ship canal from Lake Michigan to the Mississippi River, which is nothing less than the union of the Gulf of St. Lawrence with the Gulf of Mexico. When that is built, a steamer can go from St. Johns (New Brunswick), westward in a continuous inland sea, far through the Canadas and the Western States of our Union, past Chicago, on into the Mississippi, down that river, swollen above the risk of insufficient depth by the surplus of waters that now roar uselessly around the stormy coasts of Labrador; on and on, till it reaches New Orleans. For eighty-five millions of dollars it is estimated that this canal can be built, and to a depth of sixty feet in eight years. But if the depth be reduced to thirty-five feet, which is the depth of the grand canal at Suez,

and the estimated depth of the Darien, the cost can be reduced to sixty millions; and if Chinese labor be employed, can be accomplished in four years.

RAILROADS IN RUSSIA.

On the continent of Europe, our friendly neighbor, Russia, has built a railroad from St. Petersburg to Moscow, thus connecting the head and heart of the empire by a large artery, like the connection between the head and heart of the human body. And now a great work, the railroad from St. Petersburg to Odessa, draws near to completion. This iron path, the original survey of which was twelve hundred miles in length, runs through thirteen degrees of latitude and connects the Baltic Sea on the north with the Black Sea on the south, thus uniting the extremities of the empire. Simultaneously with the inception of these grand movements, the Emperor abolished serfdom, by which the shackles of servitude fell from millions of human limbs. Here, in our own country, after connecting by a network of railroads all the most populous sections, American citizens took hold of a line that stretches across the continent and brings together the extremities of the Republic. Simultaneous with the inception of this great work, and before its completion, we extinguished African slavery. Thus it would seem that the shackles of bondage which have fallen from human limbs have been forged into chains of communication which bind together nations and communities in close bonds, making the inhabitants of distant sections more and more one people, and stamping upon them the impress of unity consolidated with humanity.

Verily the world moves, and we in California must move with it or be left behind in the race for business and empire.

While California produces twenty millions of bushels of wheat per annum, upon the acres under cultivation, she has uncultivated lands of equal fertility, capable of producing fifty millions more. While she has at least fifty mines producing, she has a hundred more of a second grade lying idle and unworked. If she could quadruple her product of wheat, and double her product of gold and silver, with a like increase of wool, barley, wines, and fruits for export, and if she could manufacture those common articles of prime necessity, for which we are daily sending money out of the State to pay for, what an overflowing prosperity there would be upon the whole State. How San Francisco would grow up and spread out, street after street, and wharf after wharf, along the water front, with countless dwellings and blocks of warehouses. Across the ocean there are two empires which have greatly redundant populations. I mean China and Japan, and they are wishing to come to us in immense numbers. As laborers they are industrious, patient, skilful, docile, temperate, quiet, orderly—and it is greatly to be regretted that the question of employing them has entered the arena of politics and is being subjected to the tests of passion and prejudice, when it should be viewed by the calm eye of reason. To say that we shall not have cheap labor of some kind, is virtually to declare that no more land shall be ploughed, no more mines opened, and no more manufacturing done, and this is equivalent to saying that all the industrial interests of California shall collapse, and that widespread ruin shall be the result. I affirm that at this day no State can thrive by sending its staple products three thousand miles away to a foreign country to be manufactured, and then buying them back from the foreigners, and bringing them home to be consumed, at a greatly enhanced price, by the men who produced them

and sent them away. Such a process is suicidal. The wool of our flocks must be wrought into cloth by our own looms. The leather of the tanneries must be made into boots and shoes here. The cocooneries must be enlarged and the silk-loom introduced. Nothing stands in the way of this but the high price demanded for labor. Nothing else prevents the wheat and barley crop from being quadrupled. Millions more of grapes could be pressed. The fruit orchards could be trebled, the cocooneries multiplied without limit, and the culture of cotton, tobacco and rice could be introduced. The question of cheap labor is therefore vital, and ought to be considered by practical, sagacious men, and I beg leave to suggest that prices, as well as hours of labor, should be regulated, like the price of capital, by the law of supply and demand, and not by arbitrary, tyrannical combinations of men, to keep up prices and reduce the hours of work, which are only conspiracies against the common good. Will the present generation of Californians live in a mistake and bequeath the mistake to their children, or will they gird themselves to confront prejudice now, and use the means of prosperity which the march of events is placing within their reach? With such a combination of advantages as we possess, if we fail to become prosperous and powerful, the fault will be our own, and we shall have to make the mortifying confession that we were the people for whom God had done everything, and we could do nothing for ourselves.

THE TEMPORARY AND THE PERMANENT.

It was the misfortune of California that the men who came here at first, did not come with the idea of making homes and founding a State. Their families and household gods they left behind, intending to seize the prize of wealth and make a quick retreat. They considered themselves the victims of circumstances. They built for to-day, fenced for to-day, bought and sold for to-day. All the business and doings of men, customs of society, usages of trade, indeed, all the conditions of men's existence here, bore the stamp of *to-day*. But we have outgrown *temporary* as a youth outgrows a garment. The time has come when this must be changed or we must retrogade.

Let us turn back to our early homes in the Atlantic States and contemplate their history, as we were taught it in our boyhood, and every where the idea of the *permanent* displays itself. The pilgrim came in the Mayflower with his wife and children, to found a new home and a new country. He never thought of returning to Old England. He called it New England, for to him Old England had passed away forever. The Dutch, who sat down upon Manhattan Island, never thought of returning to their old dykes and canals in Holland. The French Huguenots could speak and dream of La Belle France, but with no thought of seeing its sunny vineyards and gay city again. All felt that America was their home. They filled it with schools, with trade, with ships. They defended it against savages. They built highways and bridges. They laid broadly down the pillars of the commonwealth, and upon all their policy, and upon all their conditions of life and business among them, throughout their system is stamped the permanent, and the temporary nowhere appears. The Pennsylvania German kept the traditions of the fatherland, but with no expectations of seeing it again. His descendants and those of the Philadelphia Quakers now possess the Keystone State as a heritage from those forefathers. It was the same with the Baltimore Catholic. The Jamestown colonist, through hunger and

pestilence, held fast to the soil. And so these men, sprung from different races, were welded together by one common experience of hardship and toil, into a nation of earnest men, and were made ready for the conflict which was to try their souls—the American Revolution.

Turn now from the history of the Atlantic States to our Pacific shore, and it has for us a solemn interest, for according as we revise and correct the past, shall be our increase or diminution in the future. If we would not retrograde from this hour, then in all that may be called our life, our social and political institutions, our municipal regulations, and in the very mode and fashion of our upbuilding, we must adopt the permanent and discard the temporary.

CITY AND COUNTRY.

The foolish train of flatterers are prone to tell the people of the country that they are independent of the city. But the dependence is mutual. The country must become cosmopolitan like the city. The country cannot live in suburban retreat. Before railroads came, the Illinois farmer was almost inundated by his crops. He could not eat them, nor sell them, nor burn them. He was like a mole in a boundless field of grain Now the railroads enable him to sell, and from a plethoric grainholder he has become a rich exporter. He is a citizen of the world, rich at home because he has the power to send his superabundance abroad. His farm in many instances becomes a village. He has a market at his door, or at Chicago, and he makes his election. What would the farmers of New Hampshire be without communication with Boston? Or the coal mines of Pennsylvania without iron paths to Philadelphia? It is not enough to have one or two great arteries of intercommunication in California. We must have a complete system of veins and arteries through the whole State. I have seen the change come over many a land. I have seen in the absence of the railroad, how everything was limited, provincial, local, stagnant. Then came the locomotive, and all was changed. Not the least important change was the cash value established at the farmer's door for everything which he had to sell.

RICH MEN.

I would have our rich men symbolize their wealth, not by splendor of equipage, but by inaugurating grand schemes of internal improvement, like the Erie Canal and the Pacific Railroads. When the name of Vanderbilt comes to the lips, does it call up any thought as to the style in which he lives? Do we think of him in the way of outward grandeur, as possessing some large diamond, costly tea sets, or golden goblets? No; we think of him as the embodiment of motive power in the United States; and if he were fitly jewelled, he would be hung all over with steamer models, car springs and safety valves, and, mounted on a locomotive, would be rushing down the Erie Railroad to the music of the steam whistle. But this was not all, to his honor be it said, and we will not forget it; when war came, he resolved to make a present to his Government of a steamship, with her apparel and tackle. It was his favorite model, and was named the "Vanderbilt." A hundred feudal lords, whose wealth and power were symbolized in cumbrous castles, their names fading and expiring in the lapse of ages, did not equal the real force personified in one Cornelius Vanderbilt.

PEACE AND WAR.

There are those who love to estimate the capacity of nations for war, as if destruction were the highest work of man. They show us how Russia can bring into the field one million four hundred thousand men; Prussia, one million two hundred and thirty thousand; France, one million three hundred and fifty thousand; Austria, one million one hundred and ten thousand; Italy, four hundred and eighty thousand. Then they calculate the problem of alliances, and show us that Russia and Prussia, allied, can place upon the field of mortal combat two million six hundred and thirty thousand warriors; while France and Austria can array two million four hundred and sixty thousand, to lay waste fields and kill those who never injured them. Is it not better to persuade man that war is only ennobled in defence of home and country? Is it not better to develop the capacities of nations for those grand enterprises which improve the material comfort of man—which increase the productiveness of the earth—which improve their modes of culture, their dwellings, their social habits and institutions—which expand thought, quicken intellect, multiply the fruits of the earth, with the flocks and herds and the grain of the fields—enterprises of which it may be said, when accomplished, that "the wilderness and solitary place shall be glad for them, and the desert shall rejoice and blossom as the rose?"

CHEERING PROSPECTS.

When we look abroad upon the whole of our country, now in the season of harvest, there is abundant cause for congratulation. It is estimated that the cotton crop of the South will be three millions of bales, an increase of one-third over last year, and is worth three hundred millions of dollars The corn will amount to two hundred and eighty-five millions of bushels, and will be worth two hundred millions of dollars; and that the sugar, wheat, tobacco and minor products, will be worth one hundred and fifty millions more, making a total of six hundred and fifty million dollars. To this must be added the vast and varied products of the North, the Middle States, and of the West, of which the wheat crop alone is two hundred and fifty millions of bushels, and then the gold and silver of the Pacific States.

That this is a broad basis for prosperity to rest upon, must be acknowledged. If these calculations shall prove to be correct, the life which will be imparted to business, when our indebtedness abroad shall be liquidated by this immense export, and the balance of trade turns in our favor, will be felt from Maine to California. If it shall come when it shall be due, according to precedent and the operation of causes supposed to be uniform in their effect, it will happen early in the spring of next year, and will be to the circles of business and finance like the coming of spring is to the kingdom of nature.

SAN FRANCISCO IN THE FUTURE.

Very few of us have yet begun to comprehend the future greatness of San Francisco. To hasten on the hour of its realization, railroads must go out in all directions—to the northward, to the southward, and to the southeast of us. The bay must be considered but a mere ferry in the great plan.

Looking into the future with the eye of hope, I see them diverging in

all directions like radii from a common centre. I see the multitudes of passengers hastening to the depots at all the hours of departure. I hear the bell strike, the clatter of merchandise, the cry of all aboard. Afar in the distance there is a glimpse of lazy, winding canals, clothing vast plains with verdure—equally in periods of greatest drought and most copious moisture—making their owners independent of rains, defiant of seasons. Through the Golden Gate are coming ships, laden from every land under the sun, while proud ships, outward bound, are tossing impatiently upon the tide, and eager to get free. At the centre of all this enterprise, this greatness, this grand banquet of traffic, sits San Francisco, looking from her throne of hills over half a continent—arbitress of a greater commerce than Thebes or Carthage, Babylon or Tyre.

THE SACRAMENTO VALLEY.

Let us survey for a moment the ground where we stand. We are assembled in the midst of the Upper Sacramento Valley, at a spot which the genius of American enterprise dedicated to civilization only nine years ago. Yonder in the valley comes the Sacramento River, pouring down from gold bearing mountains, and carrying in its current the melted snows of the Sierra Nevada. Far through the trees it winds and flows. It is the child of the Sierras, and reflects their grandeur in its course. Still and deep it rolls on, bearing many a ship and goodly steamer upon its bosom and constituting the charm of this landscape. On its left bank stands the Capital of the State, whose people built a barrier against its current and conquered the power of its floods To me there are few objects in nature more truly sublime than a valley spread out by an Omnipotent hand, from foot-hills to foot-hills, on such a vast scale as this. When dry and parched, no desert is more dreary. When uninhabited, no solitude is more profound and imposing. But when the abodes of man dot its surface, when the plow has furrowed it, when greenness clothes it as with a garment, or when its fields are loaded with harvest stores, then it is one of the loveliest objects that gladdens the eye of man, and its riches are but a type of the inexhaustible riches of the Creator. But the great valley yet waits for the railroad and the canal. Wherever such a system of internal improvements as I have sketched shall be carried out, its teeming population will be counted by millions. San Francisco will be greater than ancient Thebes was. Sacramento will be greater than San Francisco now is, and Vallejo will be the second city west of the Rocky Mountains. Look again at the valley as it lies spread out around us, forty miles in width from side to side. There are principalities in Germany where civil government is maintained, and all the pomp of a court kept up, on a much smaller extent of territory than the Sacramento Valley. The inhabitants of New England can, with difficulty, conceive of a valley forty miles wide. The dwellers by the Mohawk and the Shenandoah can have just as little comprehension of it. The Valleys of the Rhine and the Rhone are insignificant in point of territory when compared with it. And we have just as little idea of the beautiful cultivation of their valleys as they have of the prodigious extent of ours. Can we not learn a lesson each from the other? Our lesson is that the most magnificent natural advantages are nothing unless we improve them. Their lesson is, not to remain clinging to the scanty acres of Europe, but to take up their march for the New World.

ANNUAL ADDRESS.

DELIVERED BEFORE THE SAN JOAQUIN STOCK AND AGRICULTURAL IMPLEMENT ASSOCIATION, AT STOCKTON, SEPTEMBER, EIGHTEEN HUNDRED AND SIXTY-NINE.

By Dr. HOLDEN.

Ladies and Gentlemen: An address before an agricultural society or association partakes more of mixed topics, barely hinting at the various agricultural productions, modes of cultivation, raising of stock, etc., than an address made fully and directly upon any one subject. Time will not admit of dwelling at length upon any one department of the art and science of agriculture. It will be well, perhaps, to state here the object of this association, and why it was organized:

The Directors of the San Joaquin Valley Agricultural Society, a permanent organization since eighteen hundred and sixty, and one which will continue scores of years hence, I hope, passed a resolution in May last not to hold a fair this year, and the Directors had sufficient reasons for this action—reasons that came directly from citizens of this city and county. In these progressive times and age of improvement, no man should oppose or withhold his influence from these societies and associations; the benefits arising from them, to all communities, are beyond calculation. This association, "The San Joaquin Stock and Agricultural Implement Association," was organized in June last, under the laws of California, by five Trustees, as they deemed it necessary to hold a fair this season in order to keep up the good reputation this district has secured by such exhibition; and for the lack of a hall, to confine the exhibit wholly to the cattle grounds, which is the custom with a large majority of similar societies in the Eastern States. The Trustees have made great efforts to produce a good exhibition, and, so far, are well pleased with the result.

The Trustees of this association do not propose to extend their exhibitions to other years, or in any manner to interfere with the old organization, but, on the contrary, to aid it. An individual farmer, however desirous he may be to avail himself of every agricultural help, cannot always do so unless he is aided by some associated help; and what associated help can he find better than agricultural societies, where, in a few hours' observation and diligent inquiries regarding products of the soil, mode of cultivation, raising of stock and mechanical skill which these annual exhibitions produce, the whole subject is opened to the view?

Sir John Sinclair, of England, who, eighty years ago, first inaugurated agricultural societies, urged upon legislators the necessity and importance of these societies, and advocated all possible diffusion of knowledge on the subject. This great benefactor of agriculture, Sinclair, pressed upon the farmer to preserve the fertility of the soil; free it from the superfluous moisture at the least expense; gather and apply the best fertilizers; procure the best instruments of husbandry; select the best stock, and feed in the most judicious manner; secure the harvest in the most economical mode; separate the grain from the straw with economy; in short, perform all the operations of agriculture in the most judicious mode. This advice was given eighty years ago, and embraces all the advice a farmer needs. Undoubtedly, Sinclair scarcely dreamed at that time that at this day the iron horse would traverse this continent from ocean to ocean, three thousand miles, greeting on this coast high civilization; transporting machinery for husbandry that will cultivate twenty-five acres per day, and harvest and bag for market the product of an equal number of acres.

Agriculture or the products of the soil are now fostered by all nations, and most wisely so. Agriculture is a mighty giant, the life and basis of all interests and wealth, without which nations would sink into oblivion; and the nation or government that fosters most the agricultural productions, becomes not only the word's benefactor, but increases her wealth and power. This is the history of all nations, both ancient and modern, and, on the contrary, where legislators have neglected agricultural interests, those countries are backward in wealth, intelligence and prosperity. California legislators, in eighteen hundred and sixty-five, comprehended this wise idea, and passed an Act granting State premiums to the amount of one hundred thousand dollars for the following articles: Sorghum sugar, flax, cotton, tobacco, hops, raw silk, cotton drilling, burlaps, hemp, carpeting, linen, calico, cotton sheeting, pilot cloths, blankets, ingrain carpeting, wool sacks, woollen drawers, woollen undershirts, cottonized flax, mens' boots, tea, coffee, assorted cordage, tar, rosin, turpentine, printing paper, best book on the industrial resources, wine bitters, linseed oil, cotton seed oil, cotton plantation, indigo, rice.

Too much cannot be said in favor of agricultural statistics. They form the key which unlocks the hidden treasures of agricultural productions, reveals to the farmer and merchant the great laws of demand and supply, of tillage and barter, enabling both to work out a safe and healthy prosperity. There is no logic so desirable or so irresistible as the logic of statistics, and perhaps particularly so in California, where the farmer and producer are so dependent upon a foreign market, and often—quite too often—upon the speculator, who pockets, at the farmer's sacrifice, the lion's share of profit. Farmers now in this State are in a condition to hold their crops, and they should do here as they do in the great West. Let the speculator meet him at his door and bargain for his crop. Farmers have now but three things to do: Cultivate judiciously; hold on to their crops, and vote for greenbacks. Excuse me, ladies and gentlemen, for mentioning greenbacks, they will soon speak for themselves. The laws of exchange and currency are like the laws of nature, they must be obeyed. The commerce of the world is dependent on agricultural productions. A scarcity of these, or their superabundance, affects the exchanges of the world; therefore, it behooves the pro-

ducer of agricultural products to be well posted regarding his prospective crops; therefore, the necessity of a true table of statistics.

A word in regard to the insectivorous birds, the insect eaters, the species that warble to us beautiful songs and ornament home surroundings. The species found here are the blackbirds, creepers, finches, sparrows, woodpeckers, larks, magpie, bluejay (though I have not much to say in favor of this robber of cherries and plums), swallows, martins, and everybody's pet and friend, cock-robin. These birds daily devour myriads of insects, vermin, larva, caterpillars, grubs and scores of other varieties of noxious insects, that would, in the absence of these benefactors and friends of man, completely destroy orchards, gardens, trees and foliage. Acute observers of the habits of these birds and ornithologists cite hundreds of instances to this effect. God, in his all-wise Providence, created the small fish for food for larger ones; so insects and other vermin were created for food for birds. Yet, in view of these provisions and protection for bird and man, thousands of boys and men, full grown men, stand all day as sentinels, shotgun in hand, to kill by the thousands our friends and protectors, because, forsooth, they eat a few cherries, a pear or an apple. Did these cruel fellows understand the habits and use of these species of birds, they would plant an extra fruit tree or two for their use rather than shoot them. I think it just and fair that these innocent little fellows should have, now and then, a bite of a cherry, as part pay for a hard day's work, in helping the farmer and cultivator to rid his trees and grounds of noxious insects and vermin.

It is impossible in a few sentences to do justice to this subject. The subject should be studied by all agriculturists and horticulturists that think their interests suffer by birds. I will leave this interesting subject, hoping these few hints will lead to investigation by all interested, and devote a few moments to larger game and one that is seemingly more profitable—the poultry and egg business.

Few persons are aware of the immense wealth produced by the poultry business, or of the enormous amount yearly consumed in this and other countries. Time will not admit of going into details. A few instances of the consumption of poultry and eggs in some of the leading commercial marts must suffice. Sweet Erin sends through Dublin, yearly, to her beloved friends in Liverpool and London, of eggs, seventy-two millions, in value, five million dollars; Belgium sends yearly to London over forty millions; France, not willing to be outdone by her neighbor in the egg business, sends to John Bull ninety-six millions, reserving for home consumption three thousand millions, Paris alone devouring one hundred and forty millions—exhibiting the fact that France deals largely in other luxuries than soup and frogs. And John Bull, too, has a taste for other luxuries than beef. England has a constant investment in poultry of fifty million dollars; France, of seventy-five million dollars.

Crossing the water to the city of notions and isms, Boston: Statistics show that she, too, has a taste for good things, by consuming yearly over two million dollars worth of poultry and eggs. New York, ever ready to outdo the hub of the universe, even in wickedness and corruption, gobbles up over four million dollars worth of eggs and poultry. Cincinnati exports, yearly, twenty-five millions of eggs. This city, Stockton, sends yearly to market from two hundred and fifty thousand to three hundred thousand dollars worth of poultry and eggs. This amount is principally produced within a radius of twenty miles of this city. A nice little sum as pin money for the wives and daughters of this

rural district, to buy an inch or two of ribbon for a bonnet, a bloomer, or a Grecian bend.

You see, Mr. Farmer, by the above figures, the immense wealth the biddies produce. Is it not worth your while to pay a little more attention to your stock of poultry? Give them plenty of fresh water, gravel, good grub, clean roosts and shelters, and keep only the best breeds. The most popular breeds now are the black Spanish, crested or Poland, Dominiques, Dorkings, the pugnacious game bantams, Shanghai or the Asiatic varieties. The raising of poultry and eggs for market may appear to many but a trifling concern. There is no branch of rural economy more sure and profitable. It not only produces an immense article of consumption and commerce, but it enlivens and beautifies our homes. In England and Continental Europe it is an immense traffic, but Uncle Sam's citizens have had no time yet to spare on this "small fry."

Leaving fowls, we will spend a few moments upon something *fouler*—swine. This State contained, by official figures in eighteen hundred and sixty-seven, four hundred and twelve thousand five hundred and seven hogs. Raising swine, in all countries, is a profitable business; particularly so in California, as, like our poultry, they find their own grub and shelter, costing the producer but a trifle aside from his trouble. Mr. Hog gets his growth and fat either under the millions of oak trees, or picks up the tens of thousands of bushels of grain left in the harvest fields by a too common and slovenly practice of harvesting. If our farmers would substitute the Berkshire, Suffolks or Chesterwhites, for the slab-sided, long nosed tule-rooter, so common in this State, a breed that, the more they eat the poorer they get, he would not only get a much larger profit, but would be able to find his stock of swine when he needs them, without a week's ride on a worse animal, the bucking mustang, to hunt them up. But I do not propose to say much about the hog, being too much of a Jew. Jews, you know, will not eat pig, yet his flesh is consumed by a greater portion of the human race. Sometimes the apothecary makes use of Mr. Hog by making lard "sparmaciti" for healing unctions; also compounds it into many rejuvinating ointments, which would astonish the pig, did he know or understand his destiny, or reflect, while wallowing in mud and fat, that he would sometime be bottled for "cod liver oil," or "bear's grease," or spread into a "poor man's plaster," or the all-curing "Russian salve," to help the feeble man the better to grunt and sweat under the ills human flesh is heir to. There is one instance of the pork packing business in the States worth a minute's time to mention. Mr. Hancock, of the firm of Cragin & Co., Chicago, one of the Chicago commercial party, who recently visited this State, told me while in Stockton, that his firm took account of stock a year since, and found on hand seventy-one thousand barrels of pork, worth three million dollars; also, had on hand bacon, in value, five hundred thousand dollars. I should think this was some pork. This firm slaughtered the same year thirty-one thousand head of cattle, and are now preparing to slaughter in Southern Louisiana fifty thousand head this fall. This is the way our Chicago neighbors do up business.

A word for the bovine race: We had in this State, by the last official figures, five hundred and three thousand and forty-six head of cattle, in value (at forty dollars per head, the average price), twenty million dollars. Milch cows, one hundred and eighty-six thousand, valued at fifty dollars per head, three hundred thousand dollars. These cows should produce yearly, of butter, two hundred pounds to the cow, or thirty-seven

million two hundred thousand pounds. Yet there was produced in eighteen hundred and sixty-seven but four million nine hundred and sixty-four thousand three hundred and thirty-eight pounds. This State has imported butter, since eighteen hundred and sixty-four to August last, two hundred and six thousand firkins, or twenty million six hundred thousand pounds; in value, at thirty cents per pound, six million one hundred and eighty thousand dollars. So you see, Mr. Dairyman, the butter business in this State is worth your while to look after.

The dairy products of the United States have become an important branch of national industry. The butter product in eighteen hundred and sixty was four hundred and sixty-nine million six hundred and eighty-one thousand pounds; cheese, two hundred million six hundred and sixty-three thousand pounds, valued at two million six hundred thousand dollars, and constantly increasing. Number of cattle in eighteen hundred and sixty-eight, in the United States, twenty-eight million nine hundred and sixty-four thousand; horses, seven million seven hundrd and fifty-six thousand nine hundred and forty; swine, twenty-four million three hundred and seventeen thousand; sheep, thirty-eight million nine hundred and ninety-one thousand. The value of live stock on Uncle Sam's ranch (and it is some ranch) is one billion three hundred and thirty-seven million dollars. This amount is the tax valuation; double this amount, which is two billion six hundred and seventy four million dollars, and it would be about the market value—an amount more than equal to our National debt; a nice commentary upon the croakers and would-be repudiators of our National currency.

The number of domestic stock in this State, by the last official figures, were: Horses, two hundred and nine thousand eight hundred and forty-seven; cattle, five hundred and three thousand and forty-six; swine, four hundred and twelve thousand five hundred and seventy; sheep, one million eight hundred and thirty-three thousand six hundred and sixty-seven; milch cows, one hundred and eighty-six thousand. Domestic stock of all kinds since eighteen hundred and sixty has gradually increased in quality and value by higher breeding. The mustang breeds, like the Digger Indians, are disappearing from their old stamping grounds, yielding them to a higher and more civilized race, thus creating more profit, wealth and taxes.

Alluding above to associated help, or agricultural societies and associations for the diffusion of agricultural knowledge, to aid the farmer and producer, a combination of farmers and dairymen in neighborhoods, for the purpose of manufacturing butter and cheese, has become in the Eastern and Western States quite common, following and profiting by the old system of combined wealth, and brains of bankers, manufacturers and tradesmen. There are now in these States over one thousand associations for the purpose of making butter and cheese, producing annually over two hundred million dollars worth. So far this system has proved safe and profitable; therefore, why not inaugurate it in California? We are now importing yearly over two million dollars worth of butter, and more than half this amount of cheese. This amount should be made in this State, thus saving the exporting of one of our principal products—gold, in payment. This amount should go into the hands of our farmers and dairymen. It is graded stock, crosses from thoroughbreds, the farmer and stock raiser needs to increase the amount of dairy products and profits. Breed up, instill strains of pure blood, and rid the farm of all mustang breeds.

Horse racing, or trials of speed of horses, at agricultural fairs, is an

amusement and practice ignored by many, in all communities, and the managers of these fairs are much abused because, forsooth, they encourage this profitable branch of natural wealth—the raising of valuable stock, such as a Norfolk, an Ethan Allen, a Dexter and hundreds of others, speedy and notable animals, worth from ten thousand to thirty thousand dollars each. There are reasons why this amusement should be tolerated at our agricultural fairs. The horse is, by all nations and in all ages, universally admired, and horse racing has been a matter of admiration and is coeval with their subjection to man. The value of a horse is increased a hundredfold by his extra speed and endurance. The farmer and breeder exhibits his animal for their extra qualities, with pride, and in the expectation of getting an extra price, which he readily obtains; thus stimulating his neighbor to improve his stock. Any judicious mode which will improve desirable qualities of the horse, particularly speed and endurance, increases to a very large per cent. this value, consequently wealth, and lessens taxation Trials of speed and endurance of the horse are amusements, when well conducted, which even an old fogy and the fastidious clergymen desire to witness. Thousands visit agricultural fairs for no other reason than to witness the horse department and trials of speed. This class of persons would not travel so far to see a mammoth squash, an apple, or a sewing machine, so common in this State, yet, being brought directly in contact with a great variety of other interests than the horse, return with new ideas, and are better informed men. Trials of speed, at these fairs, are necessary adjuncts; they increase the receipts and produce the material aid, which could not be produced otherwise, thus enabling these societies to pay their bills and premiums. Without this aid, agricultural societies cannot prosper or even exist. All good things are liable to abuse. Who knows but that beautiful part of creation, the ladies, would not abuse the Suffrage Act should they be allowed to vote? They might become our lords, and we men, *something else?* There is one thing I am sure they would do—vote for a horse race. Excuse me, ladies and gentlemen, for dwelling so long upon the horse.

The great valleys, San Joaquin and Tulare, extending from Stockton to Tejon Pass, three hundred miles, by an average width of fifty miles, embracing twelve counties, containing over eighteen million three hundred and sixty-eight thousand acres, a territory larger than all the New England States, save New Hampshire. These counties contain land susceptible of cultivation, six million of acres; swamp and tide lands, five hundred thousand acres. This amount of land good for cultivation does not embrace land in the hundreds of little valleys in the mountains, and on the foot-hills, now well known to be perfectly adapted to fruit culture, particularly the grape in most of its varieties. These valleys have been little known or thought of outside of their resident population until recently. Since eighteen hundred and sixty-eight more land has been entered in the Stockton Land Office (over two hundred thousand acres) than in all previous years. The land in the valleys bordering on the Stanislaus, Tuolumne, Merced, Mariposa, Owens, Fresno and Chowchilla Rivers are extensively rich in soil, being a sandy loam, alluvium, and enriched for ages by the accumulation of decomposed vegetable matter and mineral washings from the mountains and hillsides; also, similar lands bordering on King's, White, Kern and Tulare Rivers, and the score of smaller streams which, like the larger streams or rivers, meander through the land from the base of the Sierra Nevada Mountains, and empty their waters into the San Joaquin River and Tulare Lake, a dis-

tance of from twenty-five to forty miles from the mountains. Hundreds of thousands of acres in the mountains and hillsides afford abundance of rich grasses the entire year for grazing. This section of the State has always been preferred by the Spanish and American settlers, the climate being more genial for raising the immense herds of stock than the northern section. The old Spanish breed of cattle and horses, that have continually grazed by the hundreds of thousands in these valleys since eighteen hundred and fifty-five, have been reduced in numbers, and stock of all kinds has wonderfully increased in quality by the introduction of pure American breeds, and recently by pure blooded or thoroughbred horses, Devon and Durham cattle, Spanish and French Merino sheep, Berkshire, Suffolk and Essex hogs.

One instance in regard to what this valley (San Joaquin) has produced this season, of wheat, is worth a moment's mention, from the fact that three years ago this section was a wide waste, not supposed to be worth the expense and time to cultivate. This section, called the Paradise country, lies between the Stanislaus and Tuolumne Rivers, embracing a territory of two hundred and thirty thousand three hundred acres in one field of wheat. Fifteen bushels to the acre is the estimated average per acre, or equal to about three million four hundred and fifty-six thousand bushels. About an equal amount of wheat was raised this season in the neighborhood of this truly Paradise. A nice little freight for a railroad.

In the Alpine regions, dense forests cover millions of acres, producing valuable woods for mechanical purposes and varieties of pines for lumber; also, minerals of all kinds, inexhaustible quarries of pure marble, quartz, lime, slate and freestone.

This State contains one hundred and fifty-four thousand one hundred and sixteen square miles, or ninety-eight million six hundred and thirty-four thousand two hundred and forty acres of land. Of this, sixty-five millions of acres are adapted to agriculture and fifteen million to grazing, the balance being mountain and swamp, or tule land. Under judicious management, experience has demonstrated that almost all productions of the soil that are raised elsewhere can be produced in California. This fact is by this time undoubtedly well known to all observing and reading persons, yet it is well for Californians to keep this fact before the people, *a la* Sherman, who made an immense fortune by keeping his lozenges before the babies.

There are several magnificent features in these valleys (the San Joaquin and Tulare) probably unsurpassed in the world. The unparalleled grandeur of the scenery; the soil and climate; the facilities for irrigating the whole valley land at a small expense, comparatively; the many large rivers and scores of intervening streams that all spring from the mountains and meander through the land, and empty their waters into the San Joaquin and the Tulare Lake, have a fall from the base of the Sierra Nevadas to the river and lake of about eight feet to the mile, thus giving sufficient force to spread their waters over the plains, by a system of canals and ditches.

The picturesque scenery is on a scale grand beyond description. Throughout all the Alpine region, hundreds of lofty peaks piled one above the other, like stepping stones to other regions, varying in height from four hundred to fifteen thousand feet above the level of the sea, are truly sublime and majestic, surpassing that of Switzerland, which for ages has been famed for possessing the largest body of elevated land and the largest number of mountain peaks known, and the greatest

number of square miles eight thousand feet above tide water. While Switzerland has only four peaks above thirteen thousand feet, and but one hundred and fifty square miles above eight thousand feet, the Sierra Nevada Mountains have one hundred peaks above ten thousand feet, and three hundred square miles above eight thousand feet. There are several peaks, according to Professor Brewer's estimate, above twelve thousand feet. Mount Shasta, which towers in solitary grandeur seven thousand feet above everything in its vicinity, and shows three States, is no longer the highest peak, being but fourteen thousand four hundred and forty feet. In Kern County, opposite Tulare Lake, is a peak supposed by Professor Brewer to be the highest in the Sierra Nevada Mountains. Mr. King, of the Brewer surveying party, reached an elevation of fourteen thousand seven hundred and thirty feet, as high as he was able to get, from three hundred to four hundred feet was supposed to be above him. This peak not only dethrones Mount Shasta, but also the highest Alpine region of the Alps.

The Sierra Nevada Mountains, which flank on the east the length of California, seven hundred miles, overlooking these splendid valleys, is one of the romantic features of the State, snow-capped in the winter, and in the summer and fall wearing a sombre blue, which gives them an indescribable grandeur and leads one's thoughts to an infinite power, the Creator of the heavens and the earth.

ANNUAL ADDRESS.

DELIVERED AT THE NINTH ANNUAL FAIR OF THE CONTRA COSTA COUNTY AGRICULTURAL SOCIETY, SEPTEMBER FOURTEENTH, EIGHTEEN HUNDRED AND SIXTY-NINE.

By O. F. ALLEY, President.

Officers and Members of the Contra Costa Agricultural Society, Ladies and Gentlemen: I am very happy to be able to meet you to-night under such favorable auspices. Never in any age has the car of progress been so heavily loaded with fruitful events as at the present time; never since the time of our first parents in the garden has the effort of man achieved such mighty results. I congratulate you, then, that you are of this nineteenth century. I am pleased to meet you as citizens of this great American republic; this God-given land; the home of the free and the asylum of the oppressed. I am gratified to claim fellowship with you as citizens of glorious California, the empire of the West and queen of all her sisters in Uncle Sam's broad domain; and I am more than proud to be able to claim you as citizens of the County of Contra Costa. We meet to-night in social reunion to commemorate the ninth birthday of our society. Since our last annual gathering, the greatest undertaking of modern times has been successfully accomplished. The East and the West have been bound together with bands of iron. What but a few years ago was considered the idle fancy of a disordered mind is to-day an established fact. To-night, while we are talking, the pioneers of twenty years ago are speeding their way across the continent, travelling in regal luxury. Who of all these pioneers that left their homes twenty years ago and embarked perhaps on board some ship that was to make her weary and pathless track through two oceans; buffeting the waves and storms of the pitiless and much dreaded Cape Horn; experiencing the climes of every zone, and consuming from four to six months in reaching this, to them, haven of hope, would have been bold enough to have predicted that in eighteen hundred and sixty-nine he would take a trip back to the old homestead by rail? Is there one of all those who landed on the Isthmus and was transported up the Chagres River in the log canoe propelled by naked muscle, that would have had the temerity to have said, God willing, in twenty years from now I will go back to my old home overland by steam?

Which one, think you, of all the hardy yeomen that came "mid the plains across," embarking all their household gods in a "prairie schooner," travelling over a trackless waste at the rate of twelve or fifteen miles a day, camping each night, weary and footsore, with no com-

pany save their own little band, the twinkling stars, and perchance the moon reflecting the light of the morrow's sun that should still find them pursuing their onward track to these western shores, could have looked his fellow voyager in the face and seriously have said: "In the march of events, twenty years shall witness the road we now travel over banded with iron" When they were fatigued and discouraged with the slow progress they were making, and when they saw that the great overland schooners, that they had allowed would take them over in safety, were more fatigued and discouraged than themselves—when the tire says to his felloes: "I can roll you no further over this desert waste," and the felloes replied, "so be it, I am heartily tired of being squeezed," and each spoke set up for itself, leaving the hub no other alternative but to accept the situation; how little those pioneers thought that tire and felloes, spokes and hubs, were to be the mile posts to mark the path of the great railway of to-day, that the bows from their wagons were bows of promise of this great, this glorious achievement. They have lived to see the time when they can step into a car, luxurious in all its appointments, and starting from where the Pacific rolls its surges against the western shores of this broad domain, they can, in a week's time, be set down in the great metropolis of this republic, whose feet are laved by the waters of the Atlantic.

While matter can thus be whirled along, our thoughts, that are the emanations of the spirit that predominates over and directs matter, can be transmitted across the continent from San Francisco to New York in so short a time that space is almost annihilated. As one great thought is but the father of another that may open the way to grand and hidden results, so a great project is but the introduction of some other mighty achievement within the almost infinite grasp of man. No sooner do we see the great railway, the longest in the world, in successful operation, than we hear of the project of a telegraph line from San Francisco to Japan, a distance of eight thousand miles. Thus we see one supply makes another demand. We can take the teas of China and Japan from San Francisco to New York in one week; but we are not satisfied with that; we want to be able to ask them in Japan the price of their teas, and to know how much they are going to give us for good Goshen butter. While such mighty projects and achievements are being pushed forward to success, let us turn within ourselves and take a retrospective view of the country and its affairs, and see whether we are forging a link that shall make one in the great chain of progress, and that shall entitle us to the consideration of this progressive age, or whether we shall be left behind in the great race, as old fossils, fit only for the century that has gone before?

As we look around this hall to-night, we are pleased to see the effort that has been made by the different exhibitors to make our ninth annual exhibition compare favorably with former years. We have quite a variety of the products of the soil. Wheat, barley, flax seed, turnips, squashes—that might be called some pumpkins, from their size—cucumbers that have stretched themselves out so that they look more like the subtle animal that tempted Eve than they do like cucumbers; broom corn that looks as though it had been reaching up to feed upon the dews of heaven, and to look down with quiet disdain upon the common corn by its side; beets that are beets, that can beat the beet that beat the beaters. Watermelons and muskmelons that make the mouth water to look at.

Fruits that would tempt the gods, and in such variety as to reflect great credit, at least upon the principal exhibitor. While the agricultural, horticultural and pomological departments are assigned their place, we are pleased to notice also that the mechanical department puts in a claim for our consideration, and last but not least, we have to thank the ladies for the very creditable effort they have made in their department, and which has added so much to the success of our exhibition, and the lady who sent us the first products of silk culture in our county is entitled to honorable distinction.

But while I am thus pleased with the effort that has been made, for I see, in what we have thus done, an earnest of what we can yet do to make our fair more interesting and attractive, let us inquire if we, as a society formed for the promotion and advancement of agriculture and mechanics, are on the high road to success, and if we are realizing the advantages which united action would warrant us to expect. Let us seriously inquire if we are not drifting away from the original aims and purposes of this organization, and converting it into an institution whose principal feature is horse racing? Shall we make the trials of speed of our fine horses an incidental affair in connection with and subservient to the greater and more laudable objects of this society, or shall racing be the *ne plus ultra*, the highest standard we expect to reach? It seems to me, and it must be apparent to all, that there is necessity for a radical change. But how are we to make this change? I see but one way, and that is to get up a larger interest. We want more farmers and mechanics to become members of our society. With five hundred members we could raise funds sufficient to insure good premiums, and we should be enabled to have a variety of exercises that would be entertaining and instructive. With a more general interest, lecturers could be obtained during our fair week, and each evening could be spent profitably to all. It is said that he who makes two blades of grass to grow where but one grew before, is a benefactor of his race! How much more, then, is he a benefactor of his race who can add a thought or suggestion that shall be the means of ameliorating or ennobling the mind or condition of man? In this age, so prolific of mighty achievements, we see that man, possessed of God-like attributes, is never satisfied to remain quiet until the whole domain of nature has been explored and all her vast and hidden resources have been utilized and made subservient to his will. Man has hardly reached the threshold of science and mechanics, and the next fifty years will, in all human probability, be as prolific of inventions and advancement as the past fifty have been. How bright and glorious then is the future before us! Let us see to it, then, that we keep pace with the march of advancement and that we are not left behind in the race.

PROCEEDINGS

OF THE

STATE AGRICULTURAL SOCIETY

FOR 1870.

STATE BOARD OF AGRICULTURE FOR 1870.

PRESIDENT.

CHARLES F. REED.....Grafton, Yolo County.

DIRECTORS.

H. M. LARUE.....Sacramento.
H. R. COVEY.....San Francisco.
R. S. CAREY.....Yolo.
C. T. WHEELER.....Sacramento.
EDGAR MILLS.....Sacramento.
ROBERT HAMILTON.....Sacramento.
WILLIAM BLANDING.....San Francisco.
E. J. LEWIS.....Tehama.
WILLIAM P. COLEMAN.....Sacramento.

OFFICERS OF THE BOARD.

Secretary.....ROBERT BECK, Sacramento.
Treasurer.....R. T. BROWN, Sacramento.

SEVENTEENTH ANNUAL MEETING.

The regular annual meeting of the California State Agricultural Society was held January twenty-sixth, eighteen hundred and seventy, at the Pavilion, corner of Sixth and M streets.

The meeting was called to order by the President, Charles F. Reed, who stated the objects of the meeting to be the transaction of the usual annual business, and the election of a President for the ensuing year, and three members of the Board of Directors, to supply the places of those whose terms had expired.

On motion, the reading of the minutes of the last annual meeting was dispensed with.

The President announced the first business in order to be consideration of the following report, which was read:

ANNUAL REPORT OF THE BOARD OF DIRECTORS.

To the Members of the California State Agricultural Society:

GENTLEMEN: Our biennial report of the transactions of the society, now in process of publication, will give to members of the society and to the people of the State such a full account of all proceedings had under our direction, and so copious an exhibit of our agricultural interests and progress, that we do not feel called upon to submit for your consideration any general or extended report at this time.

In compliance, however, with our custom at the annual meetings of the Board, we will allude briefly to the most important features of the progress of the society during the past year, and to the present condition of our rapidly developing farming interests.

We congratulate members that the long struggle we have had with the unpleasant fact of an outstanding indebtedness has come to a conclusion at last, and that the society is now completely free from debt. At the beginning of the year eighteen hundred and sixty-nine, the funded debt amounted to three thousand four hundred and sixty-eight dollars and eleven cents, and the floating debt was five hundred and twenty-six dollars and sixty-eight cents. This indebtedness has been fully discharged, and the treasury of the society now contains one hundred and seventy-one dollars and seventy-eight cents. The total receipts

from all sources, during the year eighteen hundred and sixty-nine, were twenty-eight thousand four hundred and ninety-seven dollars and eighty-five cents. An examination of the details of disbursements made will show that the closest interests of the society have been consulted in the expenditures, and that, in addition to meeting all the society's obligations, and awarding bountiful premiums to exhibitors at the fair held in September, we have made valuable permanent improvements, thus adding materially to our property interests, and providing means whereby the expenses of holding our annual fair will be perceptibly diminished. Needed improvements have been made at the Park, and others and more expensive ones have been already provided for by appropriations. At the Pavilion we have a steam engine of sixty-horse power, in excellent order, and with all the attachments made and other means provided to furnish motive power to mechanical exhibitors. The last fair held under our auspices was a marked success.

In comparing the progress made in California during eighteen hundred and sixty-nine with that of preceding years, in agricultural development, we find just cause for congratulation. Crops have been generally good. A vast number of acres of fertile land have been newly broken by the plough, and we have received large accessions to our farming population. Stock raising has been attended with general success throughout the State, and our wool interests are in a most flourishing condition—the clip amounting to almost one-seventh of the entire product in the United States. The foundation has been laid in this State for the eventual attainment of an agricultural growth second to that of no State in the Union. We look forward with pleasure to the prospective usefulness of our society, which has obtained a firm pecuniary footing in good time to be able to foster the most vital interests of the State, and do not doubt but that the year eighteen hundred and seventy will find the society, at its close, in a condition of assured prosperity and usefulness.

CHARLES F. REED, President.

Robert Beck, Secretary.

On motion, the report of the Directors was accepted and ordered spread upon the minutes.

It was moved and carried, that a Committee on Finance be appointed by the Chair, to consist of three members, to examine the accounts of the Treasurer.

The President appointed E. Black Ryan, C. S. Coffin and Lauren Upson such committee, who subsequently handed in the following report:

We, the committee appointed to examine and report on the accounts of the Treasurer of the society, have made such examination and found his accounts to be correct. There is in his hands society funds to the amount of six hundred and thirty-six dollars and seventy-eight cents.

The next business in order was announced by the President to be the election of a President for the ensuing year.

Charles F. Reed, of Yolo, was nominated.

[William M. Haynie in the chair.]

It having been moved and unanimously carried that the Secretary cast the vote of the meeting for Charles F. Reed, the Secretary announced that he was duly elected President for the ensuing year.

The President, on again assuming the chair, returned his thanks for the appreciation shown by members of the society of his official course, and stated that he hoped the record he had made in the past might be justly considered a sufficient guarantee for his future efforts on behalf of the society.

The President stated the next business to be the election of three Directors.

The following nominations were made: E. J Lewis, William Blanding, W. P. Coleman, C. H. Ross, J. R. Nickerson, T. L. Chamberlain and S. Tryon.

S. Tryon declined the nomination.

William Blanding declined the nomination.

William M. Haynie addressed the society, and expressed the desire of many members that William Blanding be elected, notwithstanding his declination.

The President appointed as Tellers, W. M. Lyon, T. J. Clunie, and L. Powers.

A ballot was then taken, resulting as follows:

Whole number of votes cast	201
Necessary to a choice	101
E. J. Lewis received	149
William Blanding	133
W. P. Coleman	105
C. H. Ross	96
J. R. Nickerson	84
T. L. Chamberlain	32
S. Tryon	1

E J. Lewis of Tehama, William Blanding of San Francisco, and W. P. Coleman of Sacramento, were declared elected members of the Board of Directors for the ensuing three years.

William M. Haynie offered the following resolution:

Resolved, That the Board of Directors of the State Agricultural Society be instructed to petition the Legislature to make an appropriation of five thousand dollars annually for two years, for the society, to be applied as premiums; and also, the further sum of one thousand five hundred dollars for each of the district societies.

The resolution was discussed by Messrs. Larue, Haynie, Hoag, and other members, and was adopted.

There being no further business before the society, the meeting, on motion, at four o'clock adjourned *sine die*.

FIRST MEETING OF THE NEW BOARD OF AGRICULTURE, FOR 1870.

SACRAMENTO, January 26th, 1870.

A meeting of the Board was held at the Secretary's office, at three o'clock P. M., and called to order by the President.

Directors Carey, Larue, Wheeler, Coleman, Covey, Mills, Blanding, Lewis and Hamilton (a full board) were present.

On nomination of Mr. Coleman, Robert Beck was re-elected Secretary; and on nomination of Mr. Mills, R. T. Brown was re-elected Treasurer.

Messrs. Larue, Carey, Wheeler and Blanding were appointed a committee to prepare a memorial to the Legislature for an appropriation; and on motion of Mr. Wheeler, Lewis was added to the committee.

On motion of Mr. Mills, it was ordered that the next State fair commence on the twelfth and end on the seventeenth of September next.

Messrs. Carey, Larue, Coleman, Blanding and the President were appointed a committee to revise the premium list.

On motion of Mr. Mills, the Secretary was authorized to have the reports of the United States Commissioners to the Paris Exposition bound, and also fifty copies of the report of the Board of Agriculture for eighteen hundred and sixty-six and eighteen hundred and sixty-seven, the bound copies all having been exhausted.

On motion, the meeting adjourned to the call of the President.

STATISTICAL TABLES FOR 1868.

TABLE OF STATISTICS.

Industrial and other statistical information for the year 1868, *as reported to the Surveyor-General by the several County Assessors, embracing the entire State.*

COUNTIES.	Acres of land inclosed.....	Acres of land cultivated.....	WHEAT.		BARLEY.		Acres of land cultivated in 1869.....	Acres of wheat sown in 1869..	Acres of barley sown in 1869..
			Acres	Bushels....	Acres.....	Bushels....			
Alameda.....	97,383	131,819	87,944	1,533,182	24,017	692,948	129,039	84,783	26,154
Alpine.....	6,000	600	150	3,000	250	5,500	700	100	300
Amador.....	57,274	19,371	2,364	36,222	2,826	47,402	17,855	1,326	3,893
Butte	164,902	37,863	21,705	344,840	9,267	196,686	35,658	18,753	12,421
Calaveras.....	45,914	12,387	789	6,764	1,007	17,209	11,658	1,361	1,163
Colusa.....	135,350	62,120	44,746	1,642,380	17,374	506,220	69,745	46,720	18,090
Contra Costa.....	83,210	52,500	40,015	600,718	8,917	21,781	69,948	40,900	27,140
Del Norte	5,265	1,657	387	10,346	76	2,750	1,354	368	314
El Dorado.....	103,444	12,965	933	8,466	291	2,205	12,464	904	367
Fresno	11,930	5,700	870	7,465	5,043	126,240	14,865	4,768	6,473
Humboldt	30,115	12,826	1,647	49,767	410	20,890	12,976	1,726	478
Inyo	5,000	1,000	350	8,500	100	2,870	....	.....	.....
Kern.....	5,000	2,398	550	16,500	906	27,180	2,398	550	906
Klamath.....	4,111	1,525	543	1,413	32	625	1,525	543	32
Lake.....	12,009	90,026	5,002	70,420	2,050	25,475	7,500	4,500	1,940
Lassen.....	24,855	6,174	815	16,310	2,718	81,560	5,838	700	3,260
Los Angeles.....	23,200	19,950	765	18,300	5,840	203,200	35,600	3,915	11,000
Marin	202,146	28,656	2,740	60,280	998	32,136	18,240	1,700	830
Mariposa	23,440	4,800	1,130	10,300	2,522	18,500	4,800	1,120	2,600
Mendocino.....	139,000	50,000	18,000	226,000	7,000	18,000	54,000	20,000	10,000

Merced	135,000	33,000	15,000	225,000	11,000	275,000	58,000	38,600	11,000
Mono	11,720	3,347	915	15,696	1,340	53,702	3,879	989	7,850
Monterey	124,550	70,484	29,389	1,401,342	13,875	943,500	97,874	65,215	24,860
Napa	99,665	41,260	36,115	601,250	2,605	52,150	40,795	34,800	3,395
Nevada	55,000	25,000	650	.....	160	.....	25,000	700	450
Placer	77,875	21,485	8,735	74,060	2,300	21,350	22,000	7,245	2,790
Plumas	51,155	2,370	1,020	19,170	100	3,200	2,500	1,000	125
Sacramento	231,609	67,165	7,999	124,626	15,921	304,639	46,757	8,466	25,081
San Bernardino	18,550	15,414	3,500	45,000	6,000	150,000	23,850	2,850	15,225
San Diego	8,000	16,000	1,800	45,000	2,500	75,000	16,000	1,800	2,500
San Francisco	14,000	2,300	8	1,500	163	4,000	2,000	5	103
San Joaquin	270,000	163,000	115,000	1,750,000	24,000	440,000	200,000	150,000	45,000
San Luis Obispo	61,083	7,530	2,590	14,701	835	33,400	9,530	4,020	1,020
San Mateo	150,000	80,000	22,500	450,000	13,000	390,000	80,000	22,300	13,000
Santa Barbara	30,553	21,186	4,000	20,000	6,000	180,000	21,186	4,000	6,000
Santa Clara	476,547	138,520	89,150	1,769,247	8,579	175,650	147,120	96,000	12,500
Santa Cruz	51,092	15,518	7,077	183,861	2,244	78,289	17,787	8,081	3,025
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	18,132	1,480	311	7,585	480	12,257	2,140	474	669
Siskiyou	75,200	24,263	11,525	220,500	3,674	110,200	27,984	12,200	3,780
Solano	212,647	112,209	88,573	1,635,481	10,781	207,750	202,956	88,573	10,781
Sonoma	510,782	207,405	164,188	2,120,213	8,166	212,121	220,420	167,290	10,570
Stanislaus	110,000	200,450	144,000	2,317,632	42,000	854,960	250,000	195,000	55,000
Sutter	134,870	57,909	44,488	423,187	18,266	246,781	74,547	49,100	18,569
Tehama	102,040	38,000	19,200	386,000	8,120	19,086	38,000	19,200	8,120
Trinity	10,370	4,284	1,035	14,192	129	2,446	3,947	966	191
Tulare	16,681	83,111	3,236	40,884	40,757	70,584	83,111	3,286	40,757
Tuolumne	46,025	9,412	935	9,739	478	5,612	9,169	2,005	534
Yolo	123,773	89,373	58,287	991,220	15,032	213,699	80,701	59,106	11,375
Yuba	57,660	26,343	6,120	73,725	12,690	147,480	29,788	8,175	7,435
Totals	4,463,127	2,132,159	1,118,891	19,651,984	362,839	7,331,333	2,343,204	1,286,133	468,076

TABLE OF STATISTICS—Continued.

COUNTIES.	OATS.		RYE.		CORN.		BUCKWHEAT.		PEAS.	
	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda	5,280	146,765	340½	7,801	991	26,223	18	204	392½	13,078
Alpine	150	4,500	.....	.....	25	1,000	5	100	10	200
Amador	16	288	32	218	749½	19,620	.....	.....	10	43
Butte	729	15,210	94	2,512	693	11,770	10	300	17	350
Calaveras	17	64	.....	.....	245	6,760	.....	.....	.....	.....
Colusa	265	8,480	.....	.....	165	5,805	.....	.....	1½	30
Contra Costa	510	20,205	.....	.....	105	1,205	.....	.....	10	117
Del Norte	484	20,057	.....	.....	11	248	.....	.....	121	3,690
El Dorado	227	244	164	2,004	55	714	.....	.....	2	35
Fresno	4	80	20	280	428	9,943	.....	.....	.....	10
Humboldt	3,870	127,100	.....	.....	342	9,454	6	127	1,142	58,384
Inyo	45	900	.....	.....	240	8,280	.....	.....	.....	.....
Kern	80	2,000	5	60	240	7,200	1	15	2	40
Klamath	149	3,860	11	133	29	1,066	.....	.....	56	3,881
Lake	250	3,998	40	320	400	7,897	1½	16	3	30
Lassen	1,335	33,392	6	170	20	410	.....	.....	10	117
Los Angeles	70	.....	40	1,200	6,000	281,500	65	1,940	22	550
Marin	11,160	401,240	4	60	60	.....	.....	.....	73	1,886
Mariposa	350	.....	135	220	44	800	.....	.....	3	120
Mendocino	12,000	360,000	300	6,000	200	6,000	.....	.....	300	9,000

Merced	.....	.....	.....	.....	1,100	55,000	.....	.....	.....	.....
Mono	160	6,225	½	14	340	1,369	1¾	60	1	25
Monterey	246	11,900	12	390	580	12,400	20	620	400	12,500
Napa	1,130	33,900	2	22	855	24,600	.....	.....	3	35
Nevada	.....	.....	.....	.....	15	.....	.....	.....	20	.....
Placer	480	952	155	360	20	200	.....	.....	4	23
Plumas	993	35,784	.....	.....	6	150	.....	.....	.....	.....
Sacramento	1,910	32,444	28	473	1,775	47,490	16	300	2	250
San Bernardino	.....	.....	.....	.....	2,400	58,080	.....	.....	.....	.....
San Diego	.....	.....	.....	.....	1,500	60,000	.....	.....	70	4,200
San Francisco	91	2,730	.....	.....	.....	.....	.....	.....	9	175
San Joaquin	15	870	250	3,190	1,450	42,050	6	240	12	780
San Luis Obispo	63	400	6	.....	1,510	37,350	24	168	50	220
San Mateo	20,000	800,000	.....	.....	75	.....	.....	.....	75	1,500
Santa Barbara	500	12,500	.....	.....	4,000	30,000	.....	.....	20	250
Santa Clara	465	5,450	.....	.....	225	2,400	.....	.....	.....	.....
Santa Cruz	812	29,542	10	100	771	19,913	84	1,250	.....	.....
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	256	7,900	.....	.....	.....	.....	.....	.....	.....	.....
Siskiyou	4,200	168,000	65	1,950	979	29,570	27	540	10	250
Solano	906	11,100	.....	.....	450	900	.....	.....	.....	.....
Sonoma	7,294	201,357	9	206	2,729	85,720	5	123	30	1,260
Stanislaus	.....	.....	.....	.....	200	4,500	.....	.....	.....	.....
Sutter	484	7,070	157	2,700	1,049	30,780	4	86	.....	.....
Tehama	125	7,000	.....	.....	125	2,576	2	86	.....	.....
Trinity	170	3,291	.....	.....	26	563	.....	.....	13½	417
Tulare	27	550	.....	.....	457	9,515	.....	.....	.....	.....
Tuolumne	26	231	31½	338	35½	553	.....	.....	2¼	43
Yolo	80	480	70	920	360	4,000	9	270	325	600
Yuba	1,640	40,700	135	2,835	697	20,550	55	2,200	11	225
Totals	79,064	2,568,759	2,122½	34,476	34,472	986,224	360¼	8,645	3,232	114,314

TABLE OF STATISTICS—Continued

COUNTIES.	PEANUTS.		BEANS.		CASTOR BEANS.		POTATOES.		SWEET POTATOES.	
	Acres.....	Pounds.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda			699	15,455			1,341	112,175		
Alpine			5	100			100	8,000		
Amador	¼	300	15	194			120	8,556	10	1,600
Butte	30	51,500	48	824	10		156	19,691	59½	7,668
Calaveras			12¼	393			68	5,432	2	120
Colusa			2	55			25	1,250	12	480
Contra Costa			220	11,653			81	6,713		
Del Norte			6	85			105	16,540		
El Dorado	2	2,000	17	393			98	4,223		
Fresno				70			35	114,160	5	640
Humboldt			2¾	93			2,420	738,428		
Inyo			50	500			100	5,000		
Kern	3	1,500	30	900			40	2,400	10	500
Klamath			8	232			125	9,878		
Lake							16	600		
Lassen			2	19			24	7,281		
Los Angeles	35	32,200	715	15,700	60	90,000	1,000	89,400	52	3,900
Marin			41	656			2,590	223,870		
Mariposa			5	150			10	330		
Mendocino							1,000	50,000		

Merced			45	1,400			40	5,500	20	1,400
Mono	½	750	10	230			145	11,095		
Monterey			1,950	61,700			1,750	367,500		
Napa			4	135	3	350	28	3,640		
Nevada							150	75,000		
Placer			4	72			130	4,200	5	460
Plumas							103	8,519		
Sacramento	7	6,000	110	5,488			517	33,885	455	30,975
San Bernardino			65	1,450			35	3,410	15	1,260
San Diego			100	6,000			50	6,250	15	1,200
San Francisco			14	300			1,280	142,460	38	2,850
San Joaquin			20	1,200	65	42,000	200	2 ,600	13	1,340
San Luis Obispo			510	20,000	5		287	11,480	1	25
San Mateo			400	10,000			6,000	600,000		
Santa Barbara			2,000	40,000			1,000	20,000	100	2,500
Santa Clara			100	1,650			345	25,650	50	800
Santa Cruz			340	4,950			424	85,400	1/16	15
Shasta										
Sierra							110	10,240		
Siskiyou			24	510			340	51,400		
Solano							172	13,215	8	400
Sonoma			10	167			3,517	211,398	7	178
Stanislaus							25	1,500		
Sutter			64	2,262			35	6,390	55	8,140
Tehama	30	14,050	12	640			41	864	23	3,510
Trinity			11	204			133	13,091		
Tulare			30	400			50	14,000	6	600
Tuolumne			12	96			50	4,888		
Yolo	40	70,000	312	5,480			580	39,125	132	5,400
Yuba	1	2,000	270	6,885	90	5,400	284	10,370	52	2,520
Totals	148¾	180,300	8,295	218,891	233	137,750	27,275	3,226,997	1,155 9/16	78,481

TABLE OF STATISTICS—Continued.

COUNTIES.	ONIONS.		HAY.		FLAX.		HOPS.		TOBACCO.		BEETS.
	Acres	Bushels	Acres	Tons	Acres	Pounds	Acres	Pounds	Acres	Pounds	Tons
Alameda	620	65,302	12,865	21,936	45	2,350	13	8,700	.....	.....	1,419
Alpine	2	100	500	600	.....	.....	.....	.....	.....	.....	20
Amador	23	1,965	6,769	5,128	.....	.....	9	6,403	.....	.....	22½
Butte	39½	2,440	7,645	8,410	.....	.....	1	250	7	11,000	2½
Calaveras	4	114	5,250	5,167	.....	.....	.....	.....	.....	.....	1
Colusa	7	350	7,412	8,525	.....	.....	2	1,500	.....	.....	5
Contra Costa	21	3,910	11,200	16,107	.....	.....	.....	.....	.....	.....	575
Del Norte	.....	.....	467	1,040	.....	.....	.....	.....	.....	.....	.....
El Dorado	7	146	6,223	6,235	.....	.....	½	500	½	80	6
Fresno	.....	80	318	712	.....	.....	.....	.....	.....	.....	7½
Humboldt	3	234	1,460	3,245	.....	.....	.....	.....	.....	.....	47
Inyo	20	1,000	800	800	.....	.....	.....	.....	.....	.....	.....
Kern	3	300	300	500	.....	.....	.....	.....	.....	.....	30
Klamath	3	160	517	471	.....	.....	.....	.....	.....	.....	1
Lake	2	40	2,240	4,000	.....	.....	.....	.....	1	300	20
Lassen	4	398	3,500	5,603	.....	.....	.....	.....	.....	.....	6
Los Angeles	30	3,900	750	2,100	1	.....	20	11,200	16	12,000	18
Marin	10	415	10,980	15,980	.....	.....	.....	.....	.....	.....	750
Mariposa	3	120	.....	4,500	.....	.....	.....	.....	.....	.....	1½
Mendocino	.....	.....	9,510	19,080	.....	.....	100	120,000	.....	.....	.....

Merced	15	2,100	3,100	4,000							
Mono	4	358	1,385	1,506				40			17
Monterey	680	3,250	2,750	5,500	15		55	12,580	32	19,300	30
Napa	4	540	8,410	10,100			18	17,000			100
Nevada	25	2,500									
Placer	1	200	8,145	8,170				900			1,075
Plumas	3	550	10,950	13,600							17
Sacramento	132	21,655	22,768	17,511			277	310,880			148
San Bernardino	16	950	950	1,706							10
San Diego	15	515	400	800							8
San Francisco	50	1,500	1,717	2,651							2,555
San Joaquin	16	3,340	20,000	22,000			23	13,000			20
San Luis Obispo	7	250	889	1,750					2	600	3
San Mateo	100	10,000	16,000	24,000	250		25	15,000			2,000
Santa Barbara	50	1,250	3,000	9,000							10
Santa Clara	75	750	13,840	24,250			85	16,500	60	50,000	875
Santa Cruz			3,303	6,427	41	556					10
Shasta											
Sierra			7,300	6,305							15
Siskiyou	12	2,740	5,730	8,595							14
Solano	4	200	17,474	20,943	110	98,000					35
Sonoma	4	210	19,186	23,978			50¾	26,950	20	15,000	140
Stanislaus			2,000	1,500							
Sutter	1	100	7,523	7,234			20	12,117			4
Tehama	4	10,280	5,000	6,112							2
Trinity	8½	440	2,467	3,424							34
Tulare			820	1,640							
Tuolumne	7¾	489	2,405	1,961			½	48	⅛	47	9¼
Yolo	377	17,040	9,657	14,114			34	34,000			20
Yuba	55	3,125	9,728	9,197			29	24,500			25
Totals	2,467¾	164,406	295,633	388,113	462	100,906	765¾	632,068	138⅝	108,327	10,108¼

TABLE OF STATISTICS.—Continued.

COUNTIES.	Tons of turnips	Tons of pumpkins and squashes	COTTON. Acres	COTTON. Pounds	Pounds of silk cocoons	Acres of broom corn	Pounds of butter	Pounds of cheese	Pounds of wool	Pounds of honey
Alameda	122	1,886					96,828	10,500	197,044	4,480
Alpine	30	15					40,000	2,000		200
Amador	3	32					18,260	831	33,259	8,560
Butte	8½	326				9	56,450	700	166,647	10,215
Calaveras	2	16			3,500		22,090	2,551	33,600	3,125
Colusa	6	9				19	18,520	1,724	485,642	15,372
Contra Costa	689	1,983				4	170,523	20,308	142,000	17,100
Del Norte							25,200		6,550	930
El Dorado	7	14					133,155	15,300	10,330	11,040
Fresno	31	232					8,700		271,500	10,250
Humboldt	28						67,820	1,340	25,118	3,550
Inyo							3,500	500		
Kern	10	500				2	4,000	500	299,496	1,000
Klamath	3	6					3,000			528
Lake	80	250					28,500	3,056	24,230	5,600
Lassen	12	48					40,000	9,175	800	560
Los Angeles	17	1,400			100	50	26,500	11,250	620,000	87,450
Marin	580	10					1,896,400	162,000	1,330	890
Mariposa	2	15					9,000	650	53,000	80
Mendocino							70,000	10,000	180,000	

Merced	.....	95	.....	.....	.....	12	8,500	2,400	473,785	18,500
Mono	26	.....	.....	.....	.....	.....	11,000	2,000	....	700
Monterey	35	600	.....	.....	.....	5	101,800	1,016,200	625,820	40,000
Napa	40	210	.....	.....	.....	2	165,000	3,500	19,000	4,800
Nevada	.....	10	.....	.....	100	.....	.....	.....	.....	.....
Placer	1,100	2,064	.....	.....	....	.....	9,950	1,000	73,120	14,775
Plumas	27	.....	.....	.....	.....	.....	163,000	.....	.....	.....
Sacramento	105	1,031	.....	.....	1,800	156	215,412	32,940	252,570	10,170
San Bernardino	4	650	.....	.....	....	.....	23,060	2,800	71,275	34,657
San Diego	6	800	.....	.....	....	2	8,290	6,000	68,000	800
San Francisco	2,190	25	.....	.....	.....	.....	9,600	15,000	.....	200
San Joaquin	25	40	.....	.....	.....	.....	200,000	20,000	151,000	1,500
San Luis Obispo	2	20	.....	.....	.....	.....	70,000	221,010	580,230	10,000
San Mateo	.....	200	.....	.....	.....	.....	150,000	186,516	1,338	5,270
Santa Barbara	16	50	.....	.....	700	.....	27,150	88,419	965,835	4,100
Santa Clara	75	1,467	.....	.....	....	.....	312,175	1,760,320	41,175	8,469
Santa Cruz	1	980	.....	.....	.....	.....	64,456	500	.....	2,400
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	54	10	.....	.....	.....	....	47,375	2,490	.....	798
Siskiyou	38	84	.....	....	.....	5	94,780	17,892	21,100	8,618
Solano	23	.....	.....	.....	.....	.....	9,132	1,000	.....	2,600
Sonoma	20	659	.....	.....	.....	.....	916,868	732,695	109,448	1,508
Stanislaus	.....	.....	.....	.....	.....	10	20,000	5,260	1,978,000	77,600
Sutter	12	436	.....	.....	.....	830	56,530	5,390	105,460	15,756
Tehama	3	3	.....	.....	.....	87	33,604	20,010	628,942	3,420
Trinity	122	74	.....	.....	.....	.....	18,740	870	.....	1,200
Tulare	.....	20	.....	.....	.....	25	12,414	1,159	539,750	7,850
Tuolumne	6½	81	.....	.....	.....	.....	14,900	1,318	6,268	3,394
Yolo	310	786	.....	.....	2,000	200	68,950	3,350	139,702	19,410
Yuba	43	300	.....	.....	.....	....	.....	.....	.....	.....
Totals	5,914	17,437	.....	.....	8,200	1,418	5,571,132	4,422,355	9,402,364	479,425

TABLE OF STATISTICS—Continued

COUNTIES.	Number of apple trees...	Number of peach trees...	Number of pear trees.....	Number of plum trees....	Number of cherry trees..	Number of nectarine trees.....	Number of quince trees..	Number of apricot trees..	Number of fig trees.....	Number of lemon trees...
Alameda	84,987	16,233	38,260	21,690	24,611	1,965	2,394	3,205	1,347	91
Alpine	300	100	20	.....	10	5	10	10	.....	.....
Amador	34,852	21,000	13,804	4,188	2,049	995	1,310	860	941	4
Butte	53,779	38,243	12,207	3,403	1,435	1,211	890	1,831	2,073	50
Calaveras	20,812	16,325	5,349	3,091	1,166	728	1,052	1,035	1,250	10
Colusa	19,345	23,796	5,060	2,540	758	657	1,197	960	1,240	125
Contra Costa	32,508	18,101	9,806	5,200	4,976	328	3,701	816	891	39
Del Norte	6,812	240	336	204	368	9	14	5	.....	.....
El Dorado	86,736	31,540	10,596	5,220	2,476	1,463	904	757	831	1
Fresno	1,672	2,726	417	136	54	27	46	133	147	.....
Humboldt	47,880	585	1,391	2,842	1,311	8	83	18	7	1
Inyo	350	1,500	100	50	50	.....	.....	.....	.....	.....
Kern	350	500	100	50	30	20	6	15	100	20
Klamath	2,173	1,252	97	161	55	11	16	7	.....	.....
Lake	10,400	6,542	1,200	1,640	176	102	109	160	62	.....
Lassen	5,069	2,017	506	367	47	31	64	150	1	.....
Los Angeles	6,600	11,500	5,200	100	150	250	700	1,850	2,000	3,000
Marin	5,100	1,350	1,100	1,620	550	.....	410	80	18	.....
Mariposa	7,221	7,823	780	528	106	100	105	310	260	.....
Mendocino	25,000	15,000	1,700	1,600	1,000	50	100	.....	.....	.....

Merced	17,000	13,000	2,150	1,100	270	83	65	340	333	28
Mono	983	224	755	241	21	14	206	15	310	.....
Monterey	20,620	11,500	17,417	2,182	972	423	83	1,014	133	38
Napa	56,705	26,285	15,585	5,665	6,755	845	1,260	1,695	730	25
Nevada	30,000	18,000	450	750	500	600	1,000	350	1,000	.....
Placer	41,554	23,694	10,957	3,707	1,482	1,014	1,990	852	1,293	28
Plumas	2,700	2,978	543	167	72	20	34	17	.....	.....
Sacramento	64,998	53,981	23,664	10,219	3,216	2,555	3,937	9,408	4,568	95
San Bernardino	6,358	12,800	680	1,204	75	320	225	620	450	257
San Diego	860	701	500	121	140	25	80	600	300	106
San Francisco	2,000	200	810	300	200	10	18	25	50	.. ..
San Joaquin	47,000	40,000	9,000	4,750	1,000	1,300	600	3,000	2,900	.....
San Luis Obispo	2,299	1,160	608	483	275	82	202	411	100	2
San Mateo	18,000	20,000	2,500	1,230	600	410	200	1,300	315	68
Santa Barbara	14,400	11,000	4,600	680	650	950	2,500	3,800	4,500	970
Santa Clara	825,000	80,650	65,615	21,000	16,265	1,500	8,970	6,250	1,500	13
Santa Cruz	36,491	3,802	3,913	2,925	1,508	65	319	487	142	5
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	6,138	2,750	758	346	278	47	43	34	7	1
Siskiyou	45,700	15,470	1,866	1,589	1,306	324	313	414	23	8
Solano	19,087	14,575	8,798	3,459	3,593	383	236	8,444	1,921	3
Sonoma	322,760	55,965	16,972	31,763	8,516	1,326	3,086	1,881	1,997	212
Stanislaus	6,432	9,777	1,548	543	300	500	80	575	360	.....
Sutter	11,051	12,012	3,156	1,704	413	799	602	1,013	1,468	10
Tehama	10,052	21,081	11,015	11,002	506	814	213	840	720	9
Trinity	5,499	3,863	2,259	1,256	564	302	174	283	7	.....
Tulare	8,228	20,860	1,117	888	373	216	63	415	217	.....
Tuolumne	30,674	27,462	8,046	3,079	1,017	357	856	1,054	874	5
Yolo	30,971	48,440	17,484	4,837	1,860	1,167	678	1,583	1,576	9
Yuba	36,721	26,786	7,941	4,513	1,929	1,314	3,206	2,192	1,857	46
Totals	2,182,224	795,394	348,736	176,334	96,034	25,728	44,350	61,114	40,819	5,280

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of orange trees.	Number of olive trees....	Number of prune trees...	Number of mulberry trees.....	Number of almond trees.	Number of walnut trees..	Number of gooseberry bushes.....	Number of raspberry bushes.....	Number of strawberry vines.....	Number of grape vines..
Alameda	75	362	1,206	213	3,391	3,269	69,764	654,307	5,984,973	176,795
Alpine.....	.....	.....	.....	.....	.....	.....	200	250	300	100
Amador.....	38	16	159	29	876	359	12,225	15,136	65,952	683,623
Butte.....	288	53	25	326	1,032	61	22,952	42,821	167,202	573,697
Calaveras.....	28	2	43	712	107	823	3,206	25,427	758,019	704,471
Colusa.....	70	8	.....	45	140	150	15	160	350	68,000
Contra Costa.....	89	91	116	718	381	210	5,181	6,208	400	302,417
Del Norte.....	.....	.....	.....	.....	2	33	797	40,987	15,025	69
El Dorado.....	9	2	30	34,145	368	190	6,719	15,559	147,769	1,147,250
Fresno.....	17	.....	.....	.....	.....	86	63	68	764	7,480
Humboldt.....	.....	.....	.....	.....	13	67	4,160	54,127	58,770	280
Inyo.....	.....	.....	.....	.....	.....	.....	.....	.....	2,500	1,000
Kern.....	20	10	.....	8	.....	20	.....	.....	4,000	4,000
Klamath.....	.....	.....	.....	.....	.....	5	227	432	4,800	3,484
Lake.....	3	.....	16	8	152	40	600	350	25,000	16,400
Lassen.....	.....	.....	.....	.....	.....	.....	346	4,319	253,745	2,249
Los Angeles.....	25,000	1,600	75	20,000	550	3,500	900	.....	144,000	3,840,000
Marin.....	.....	.....	.....	.....	.....	.....	400	440	1,700	10,800
Mariposa.....	.....	.....	.....	50	20	.....	510	1,500	201,000	97,000
Mendocino.....	.....	.....	.....	.....	.....	100	1,000	500	10,000	15,000

Merced	.....	.....	.....	6,014	37	.....	.....	.....	28,000	246,070
Mono	.....	1	.....	9	3	26	51	17	2,562	3,752
Monterey	.....	27	192	258	314	81	1,800	2,550	125,100	162,500
Napa	30	50	40	150	300	750	7,485	350	3,800	1,590,255
Nevada	100	.....	250	5,000	50	75	10,000	26,000	150,000	250,000
Placer	17	.....	256	2,625	515	249	1,713	41,474	167,520	588,618
Plumas	.....	.....	.....	.....	.....	4	270	913	78,500	2,300
Sacramento	163	174	426	205,205	2,156	4,131	5,648	15,770	142,770	1,598,507
San Bernardino	675	70	340	900	600	756	450	665	9,650	425,000
San Diego	2,122	700	.....	800	62	46	20	100	530	80,000
San Francisco	.....	.....	.....	.....	.....	.....	1,606	5,000	42,000	10,140
San Joaquin	8	.....	300	350	250	150	1,500	800	18,000	525,000
San Luis Obispo	11	287	3	.....	.....	61	59	60	7,020	35,900
San Mateo	15	9	.....	4,000	160	500	1,500	960	3,000,000	756,376
Santa Barbara	1,100	15,000	1,800	10,800	13,400	3,500	250	800	2,500	350,000
Santa Clara	95	150	1,900	2,500	500	1,850	22,000	1,200	565,000	1,000,000
Santa Cruz	30	28	234	1,925	22	452	2,046	12,200	98,000	240,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	1	.....	12	11	10	13	1,380	2,865	1,200	9,000
Siskiyou	14	.....	27	7,218	29	16	3,016	7,648	30,042	33,724
Solano	32	171	30	15,014	454	575	517	439	8,630	654,396
Sonoma	388	76	616	6,350	4,354	2,221	20,212	6,940	174,105	4,112,279
Stanislaus	.....	.....	.....	.....	50	.....	.....	.....	.....	180,978
Sutter	1	2	28	20,380	184	287	117	17	2,022	239,222
Tehama	33	7	28	42	71	68	705	114	128,161	246,212
Trinity	.....	.....	.....	.....	22	13	1,734	11,751	102,405	20,409
Tulare	.....	.....	.....	40	22	100	3,000	1,770	14,927	175,875
Tuolumne	45	1	57	920	68	64	451	9,259	304,975	342,317
Yolo	8	14	317	25,254	1,135	350	285	109	8,600	244,980
Yuba	43	35	43	2,106	610	637	7,400	12,050	115,000	424,665
Totals	30,569	18,946	8,569	374,125	32,400	25,888	224,480	1,024,412	18,262,288	22,402,580

TABLE OF STATISTICS—Continued.

COUNTIES.	Gallons of wine	Gallons of brandy	Number of horses	Number of mules	Number of asses	Number of cows	Number of calves	Number of beef cattle	Number of oxen	Total number of neat cattle
Alameda	27,140	200	8,689	946	7	5,603	3,421	1,701	628	11,353
Alpine			300	20		800	500	350	150	1,800
Amador	129,993	2,750	2,434	196	35	2,064	1,600	2,016	310	6,451
Butte	30,828	2,676	5,862	751	109	3,919	3,299	3,953	265	12,528
Calaveras	55,132	3,263	2,617	257	42	1,910	1,362	2,566	282	6,120
Colusa	150		7,826	580	19	13,000	8,850	175	7,215	29,240
Contra Costa	61,370		6,780	578	43	6,103	3,281	3,107	196	12,687
Del Norte			609	76	3	755	577	1,332	138	2,802
El Dorado	168,638	47,409	2,143	232	40	2,574	1,990	2,066	385	7,015
Fresno			4,740	330	22	26,027	7,870	4,616	280	38,793
Humboldt			5,317	790	11	8,482	6,165	2,810	597	21,412
Inyo			734	94	50	241	150	892	138	1,421
Kern			4,100	240	90	24,613	9,826	2,121	456	37,016
Klamath	640		375	519	7	509	487	791	102	1,889
Lake			1,863	133	7	1,209	1,090	502	94	2,895
Lassen			1,904	27	2	2,038	1,876	15,000	125	18,039
Los Angeles	1,111,200	85,800	12,000	2,500	150	3,160	3,000	11,700	500	18,300
Marin	3,000		2,790	60	4	15,380	2,430	1,980	490	20,280
Mariposa	8,000		1,500	250	75	1,540	1,540	2,520	370	5,970
Mendocino			9,000	3,000	10	10,000	8,000	2,000	1,000	21,000

Merced	29,000	1,400	3,373	326	36	16,700	16,000	17,325	75	50,100
Mono	.....	.....	929	72	15	915	890	.....	357	2,162
Monterey	4,000	600	4,646	202	15	5,891	3,449	11,646	77	21,063
Napa	103,365	46,143	5,215	485	45	3,190	2,400	2,600	134	8,324
Nevada	25,000	500	2,225	175	5	1,550	175	500	350	2,575
Placer	51,300	5,630	1,782	271	11	917	755	855	530	3,057
Plumas	.....	....	1,373	120	24	1,475	1,400	3,423	168	6,466
Sacramento	65,864	3,214	6,649	803	26	6,497	5,211	3,633	262	15,003
San Bernardino	74,500	10,500	3,500	525	45	2,500	2,100	1,200	256	6,025
San Diego	2,820	.....	4,280	474	48	1,300	1,100	19,420	243	22,063
San Francisco	.....	....	9,000	180	5	3,150	120	130	40	3,440
San Joaquin	25,000	3,250	11,800	1,050	12	4,500	5,250	9,000	525	19,275
San Luis Obispo	24	.....	1,998	211	41	4,544	2,100	8,010	80	14,734
San Mateo	.....	.....	2,928	237	40	5,826	1,675	500	276	8,277
Santa Barbara	20,800	560	4,558	477	22	5,757	2,719	2,610	108	11,094
Santa Clara	47,450	11,500	9,978	725	12	6,076	4,255	9,400	314	20,045
Santa Cruz	12,700	.....	1,900	125	10	1,600	1,132	2,017	451	5,200
Shasta	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	600	.....	324	117	33	680	353	485	210	1,928
Siskiyou	3,200	.....	6,112	1,125	41	3,410	2,954	20,216	420	26,580
Solano	23,891	2,840	5,925	1,051	8	2,782	175	3,638	130	6,634
Sonoma	348,136	6,545	9,856	1,198	53	11,187	7,615	5,507	714	25,023
Stanislaus	10,000	900	6,136	620	40	3,412	3,008	4,000	.....	10,420
Sutter	23,116	3,260	2,700	428	9	2,653	1,736	626	170	5,185
Tehama	20,000	4,312	6,115	814	8	5,112	1,940	1,400	112	8,564
Trinity	....	141	568	209	7	978	451	1,152	214	2,795
Tulare	3,000	1,500	7,685	675	50	20,000	13,354	2,975	422	36,751
Tuolumne	50,597	1,794	1,193	138	41	1,397	1,038	545	128	3,108
Yolo	21,310	6,261	7,508	1,137	38	3,722	2,747	1,948	126	8,543
Yuba	26,000	4,385	1,723	333	32	1,997	1,617	2,284	125	6,023
Totals	2,587,764	257,333	212,562	25,882	1,498	249,585	154,033	198,643	20,738	636,468

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of sheep.....	Number of Cashmere and Angora goats.	Number of hogs.....	Number of chickens.	Number of turkeys..	Number of geese.....	Number of ducks.....	Number of hives of bees.....
Alameda	28,478	.....	9,161	50,542	3,332	1,318	8,274	438
Alpine	.....	.....	400	600	500	.....	100	30
Amador	12,935	* 356	5,575	13,644	1,579	916	666	638
Butte	71,940	57	15,130	16,394	2,782	245	386	2,045
Calaveras	17,388	3,062	7,144	15,725	1,542	501	1,118	421
Colusa	168,749	15	30,945	33,470	5,500	635	900	15,650
Contra Costa	87,190	14	16,786	27,079	8,703	861	1,814	1,256
Del Norte	737	.....	1,178	1,820	27	62	134	131
El Dorado	3,250	* 680	3,947	10,481	1,054	362	419	908
Fresno	83,150	75	12,340	7,648	535	47	816	438
Humboldt	7,527	* 40	9,067	14,703	1,054	218	162	439
Inyo	1,100	.....	320	2,000	100	.....	.....	.....
Kern	62,374	.....	1,652	18,870	70	25	400	200
Klamath	145	* 50	1,182	1,714	19	6	12	78
Lake	12,440	.....	26,000	22,250	800	350	1,500	850
Lassen	1,028	.....	509	5,467	83	.....	179	20
Los Angeles	209,000	2	4,500	35,000	1,500	600	2,200	1,590
Marin	400	.....	5,110	1,800	.....	200	3,050	40
Mariposa	12,000	* 1,200	9,120	17,320	1,200	160	920	3
Mendocino	60,000	.....	30,000	.....	.....	.....	.....	.....
Merced	104,000	.....	16,400	13,095	1,250	175	1,280	1,340

Mono	70	.....	2,507	6,777	55	.....	21	9
Monterey	156,503	† 600	7,363	24,500	590	812	950	1,748
Napa	7,600	.....	8,500	20,200	5,200	320	2,100	450
Nevada	100	....	1,500	14,500	3,000	350	500	275
Placer	27,393	303	8,900	11,921	14,075	233	695	973
Plumas	515	.....	789	13,671	93	12	137	13
Sacramento	65,273	181	9,319	26,980	13,406	1,195	2,274	1,424
San Bernardino	32,590	42	1,925	8,605	456	255	1,068	1,297
San Diego	16,800	.....	880	6,000	100	120	140	32
San Francisco	130	155	3,000	4,058	442	447	932	29
San Joaquin	38,858	450	15,000	50,000	8,000	1,100	4,500	500
San Luis Obispo	85,000	600	2,500	11,000	450	50	119	800
San Mateo	446	13	2,586	4,861	1,142	383	741	527
Santa Barbara	193,167	* 280	651	10,300	800	184	924	450
Santa Clara	25,879	10,300	99,280	2,500	1,500	7,500	1,750	.....
Santa Cruz	314	* 235	1,696	7,872	279	217	393	325
Shasta	.....	.....	.....	.....	.....	.....	....	
Sierra	150	.....	768	5,317	197	213	268	68
Siskiyou	27,480	.....	6,784	19,850	842	410	518	576
Solano	29,242	40	8,296	16,222	1,531	545	1,099	225
Sonoma	29,970	† 50	26,146	45,547	3,599	5,414	4,387	143
Stanislaus	167,000	* 700	30,600	65,000	19,000	2,680	4,032	1,940
Sutter	3,000	.....	2,215	4,994	375	203	214	232
Tehama	123,108	6	10,113	17,640	7,000	412	640	406
Trinity	346	.....	1,083	9,921	506	207	165	308
Tulare	100,430	500	18,351	116,976	940	175	6,780	1,438
Tuolumne	1,877	* 1,024	6,484	9,921	1,036	158	900	480
Yolo	48,097	.....	15,632	46,016	12,438	3,323	1,076	1,222
Yuba	12,769	21	8,399	22,539	11,263	566	2,297	1,358
Totals	2,137,948	21,061	508,733	913,318	140,055	34,114	63,946	43,763

* Common. † Half breeds.

TABLE OF STATISTICS—Continued.

COUNTIES.	GRIST MILLS.				Barrels of flour made....	Bushels of corn ground..	SAW MILLS.		Feet of lumber sawed....	No. of shingles made.....
	Steam power...	Run of stone...	Water power...	Run of stone...			Steam power...	Water power...		
Alameda	4	13	2	3	69,590	2,960	.....	.....	.....	.....
Alpine	.....	.....	.....	.....	.....	.....	2	5	2,000,000	300,000
Amador	1	3	2	3	4,000	5,042	8	1	5,520,000	1,000,000
Butte	1	4	3	7	72,000	17,811	11	7	12,240,000	5,375,000
Calaveras	.....	.....	.....	.....	.....	.....	4	6	2,830,000	.....
Colusa	3	5	.....	.....	35,000	6,075	2	.....	160,000	.....
Contra Costa	3	11	.....	.....	29,000	5,100	.....	.....	7,930,000	360,000
Del Norte	2	4	.....	.....	1,050	.....	2	1	500,000	.....
El Dorado	.....	.....	1	1	20	50	15	10	.....	.....
Fresno	.....	.....	.....	.....	.....	.....	5	.....	184,000	.....
Humboldt	2	2	1	1	2,753	510	6	3	30,250,000	6,120,000
Inyo	.....	.....	1	2	2,000	.....	.....	1	1,000,000	250,000
Kern	.....	.....	2	3	800	600	5	1	1,600,000	100,000
Klamath	.....	.....	1	2	1,800	12	2	8	4,135,617	11,000
Lake	.....	.....	1	2	6,400	2,000	3	2	1,717,000	800,000
Lassen	.....	.....	2	3	4,000	300	1	3	476,560	.....
Los Angeles	.....	.....	5	10	5,500	2,000	1	.....	.....	.....
Marin	.....	.....	.....	.....	.....	.....	1	.....	450,000	200,000
Mariposa	.....	.....	.....	.....	.....	.....	6	.....	1,500,000	400,000
Mendocino	1	2	3	4	15,000	500	15	5	60,000,000	5,000,000

Merced			3	9	7,000	6,500				
Mono			2	2	1,951	723	1	4	420,000	355,000
Monterey	2	2	1	1	1,350					
Napa	2	5	2	3	27,400	16,000	3	1	325,000	30,000
Nevada	1	4			7,000		27	5	30,000,000	2,000,000
Placer							13	3	13,650,000	2,100,000
Plumas	1	2			1,750	50	3	11	3,995,000	
Sacramento	4	18			195,000	18,000	2			
San Bernardino			2	3	9,000	3,500	4	1	2,400,000	900,000
San Diego			1	1			1			
San Francisco	12	45			529,400	3,750	8		24,200,000	
San Joaquin	4	15			92,000	8,500				
San Luis Obispo			3	4	2,050	450	2		3,175,208	
San Mateo	1	4	1	2	10,000		14	2	10,000,000	24,000,000
Santa Barbara								1		
Santa Clara	7	21	3	8	222,750	690	3	4	3,026,500	700,000
Santa Cruz	2	5	3	6	20,600	2,454	15	9	19,600,000	10,000,000
Shasta							13	15	4,856,000	413,000
Sierra			1	1						
Siskiyou	2	3	6	11	23,400	2,500	4	10	4,200,000	1,500,000
Solano	4	6			4,500					
Sonoma	4	6	4	5	48,050	3,070	17		6,309,000	3,563,000
Stanislaus	1	3	2	5	13,824	880				
Sutter										
Tehama			3	9	24,160	2,807	2	4	1,000,000	50,000
Trinity			1	2	1,560	230		15	1,650,000	57,000
Tulare	1	3	2	2	13,250	2,500	1	2		150,000
Tuolumne	1	1	2	3	4,600	190	6	2	2,260,000	473,000
Yolo	2	5	1	2	327,000	900				
Yuba	2	9	1	2	35,200	16,440	10	4	3,900,000	1,500,000
Totals	70	201	68	122	1,871,708	133,094	238	146	267,459,885	67,707,000

TABLE OF STATISTICS—Continued.

COUNTIES.	QUARTZ MILLS.		MINING DITCHES.			IRRIGATING DITCHES.		WOOLLEN MILLS.		COTTON MILLS.		COAL.	RAILROADS	
	Number.....	Tons crushed.....	Number.....	Miles in length..	Amount of water used per day—Inches.....	Number.....	Acres irrigated..	Number.....	Pounds of wool used.....	Number.....	Pounds of cotton used.....	Tons mined.....	Number.....	Miles in length..
Alameda	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	3	46½
Alpine	3	200	.....	.....	.....	1	500	.....	.....	.....	.....	.....	.....	.....
Amador	29	69,240	35	427	5,575	24	753	.....	.....	.....	.....	.....	.....	.....
Butte	12	3,150	24	224	45,900	46	1,354	.....	.....	.....	.....	.....	1	13½
Calaveras	24	11,536	22	598	6,300	26	621	.....	.....	.....	.....	.....	.....	.....
Colusa	.....	.....	.....	.....	.....	1	15	.....	.....	.....	.....	.....	.....	.....
Contra Costa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71,000	3	15
Del Norte	.....	.....	.....	63	15,800	1	5	.....	.....	.....	.....	.....	.....	.....
El Dorado	32	3,730	53	853	5,365	25	2,281	.....	.....	.....	.....	.....	1	6¼
Fresno	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humboldt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2
Inyo	7	.....	1	6	50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kern	9	800	4	20	1,000	20	600	.....	.....	.....	.....	.....	.....	.....
Klamath	3	3,000	74	60	11,055	24	400	.....	.....	.....	.....	.....	1	2
Lake	.....	.....	.....	.....	.....	1	500	.....	.....	.....	.....	.....	.....	.....
Lassen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	3	1,670	6	19	1,775	50	15,000	.....	.....	.....	.....	.....	1	20½
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	30	35,000	20	66	3,500	60	180	.....	.....	.....	.....	.....	.....	.....
Mendocino	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Merced														
Mono	3		1	6	200	3	35							
Monterey														
Napa													1	35
Nevada	73	125,000	53	875									1	40
Placer	22	702,760	36	379	12,900	3	10						2	113½
Plumas		22,600		220	25,000	35	2,500							
Sacramento			2	45	4,000			1	300,000				3	62½
San Bernardino	1		2	5	500	40	9,000							
San Diego	1													
San Francisco								3	3,250,000				8	40
San Joaquin						2	2,500						1	44
San Luis Obispo						2	200							
San Mateo													1	25
Santa Barbara					450									
Santa Clara													2	60¾
Santa Cruz														
Shasta														
Sierra	19	25,000		134	12,000	15	227							
Siskiyou	5	1,400	20	250	4,500	12	4,200							
Solano													2	40
Sonoma													1	3½
Stanislaus			2	10	200	1	200							
Sutter														
Tehama						20	250							
Trinity	1	5	109	327	44,761	82	1,069							
Tulare						100	3,000							
Tuolumne	44	35,200	11	192	6,740	58	995							
Yolo						2	21,000						1	47¾
Yuba	9	5,500	17	63	4,400	17	350	1	380,000				2	27
Totals	330	1,045,791	492	4,842	211,971	671	67,745	6	3,930,000			71,000	36	645

TABLE OF STATISTICS—Continued.

COUNTIES.	ASSESSED VALUE OF PROPERTY.				Estimated total population	Registered voters	Poll tax collected
	Real estate	Improvements	Personal property	Total valuation			
Alameda	$7,736,920 00	$1,685,595 00	$589,246 00	$10,011,561 00	17,796	4,058	$11,896 00
Alpine	240,000 00		93,000 00	333,000 00	400	250	225 00
Amador	962,284 00	247,549 00	527,625 00	1,737,458 00	11,400	2,552	1,801 00
Butte	654,513 00	301,841 00	1,658,035 00	2,614,389 00	14,609	2,943	5,236 00
Calaveras	572,741 00	210,570 00	476,774 00	1,260,085 00	11,056	2,255	1,501 20
Colusa	1,897,556 00		2,014,934 00	3,912,490 00	9,500	1,840	991 00
Contra Costa	1,884,106 00	145,650 00	1,305,324 00	3,335,080 00	9,500	2,804	2,470 00
Del Norte	123,021 00	81,773 00	310,880 00	515,674 00	1,600	350	1,050 00
El Dorado	229,419 00	650,916 00	940,610 00	1,820,945 00	9,592	2,892	4,646 95
Fresno	737,973 00	128,946 00	1,140,189 00	2,007,108 00	2,400	646	447 00
Humboldt	450,950 00	368,180 00	872,427 00	1,691,557 00	6,500	1,634	1,838 00
Inyo	92,412 00		144,755 00	237,167 00	700	370	400 00
Kern	440,000 00	40,900 00	866,500 00	1,346,500 00	1,400	766	539 00
Klamath	130,663 00		222,105 00	352,768 00	2,500	380	683 00
Lake	92,500 00	140,000 00	415,916 00	648,416 00	4,100	860	1,070 00
Lassen	185,780 00		332,775 00	518,555 00	1,550	468	336 00
Los Angeles	2,159,977 00		1,604,068 00	3,764,045 00	14,500	3,749	2,724 00
Marin	1,797,193 00		920,410 00	2,717,045 00	6,900	1,335	2,546 00
Mariposa	125,155 00	457,435 00	510,512 00	1,093,102 00	7,000	1,224	1,690 00
Mendocino	477,973 00	162,906 00	1,402,045 00	2,042,924 00	8,000	2,100	3,328 00

Merced	814,365 00	229,065 00	1,235,447 00	2,278,877 00	3,000	808	590 00
Mono	75,775 00	113,880 00	169,198 00	358,853 00	500	260	552 00
Monterey	1,041,375 05	189,290 00	894,572 50	2,125,237 55	8,478	2,182	2,141 00
Napa	2,636,250 00		1,288,635 00	3,924,885 00	9,600	1,933	2,663 00
Nevada	3,478,988 00		2,507,244 00	5,986,232 00	20,000	7,385	8,384 00
Placer	2,049,949 00	514,475 00	2,184,865 00	4,749,289 00	13,750	5,665	5,575 00
Plumas	612,138 00		589,692 00	1,201,830 00	5,000	1,175	
Sacramento	5,362,629 00	528,140 00	4,683,595 00	10,574,364 00	35,000	9,750	9,750 00
San Bernardino	253,478 00	7,100 00	364,405 00	624,983 00	5,200	1,194	473 00
San Diego							
San Francisco	75,000,000 00		32,640,646 00	107,640,646 00	150,000	35,214	
San Joaquin	3,219,350 00	1,842,000 00	2,540,150 00	7,601,500 00	24,000	4,864	3,000 00
San Luis Obispo	713,665 75	191,779 00	674,995 00	1,580,439 75	6,440	1,215	165 00
San Mateo	1,211,408 00	301,312 00		1,512,720 00	4,300	1,350	514 00
Santa Barbara	409,476 00	492,661 00	526,060 00	1,428,197 00	8,600	1,217	660 00
Santa Clara	5,088,705 00	2,615,880 00	4,060,592 00	11,765,177 00	24,000	6,000	10,000 00
Santa Cruz	1,003,223 00	634,053 00	804,116 00	2,441,392 00	10,000	2,400	2,888 00
Shasta							
Sierra	879,160 00	92,372 00	1,274,500 00	2,246,032 00	5,000	2,724	4,254 00
Siskiyou	585,223 00		1,365,095 00	1,950,318 00	9,500	2,300	4,602 00
Solano	2,116,277 00	1,043,594 00	1,214,263 00	4,374,134 00	13,000	3,183	7,854 00
Sonoma	3,501,307 00	113,794 00	2,523,735 00	6,138,836 00	22,321	4,734	6,692 00
Stanislaus	560,852 00	360,468 00	687,804 00	1,609,124 00	3,644	1,200	832 00
Sutter	766,334 00	300,386 00	820,766 00	1,887,486 00	4,880	1,231	2,208 00
Tehama	945,000 00	329,523 00	606,213 00	1,880,736 00	5,200	1,110	600 00
Trinity	81,394 00	179,206 00	429,794 00	690,394 00	3,122	944	2,715 00
Tulare	592,248 00	1,493,137 00	2,085,485 00	4,170,870 00	9,000	1,700	500 00
Tuolumne	625,079 00		552,170 00	1,177,249 00	6,009	2,117	1,958 00
Yolo	1,817,353 00	569,521 00	1,740,583 00	4,127,457 00	11,780	3,061	4,014 00
Yuba	735,280 00	1,335,340 00	1,996,315 00	4,066 935 00	6,500	1,655	2,154 00
Totals	$137,167,417 80	$18,098,097 00	$86,809,006 50	$242,074,520 30	568,827	141,774	$131,155 95

REPORT.

BEN. E. HARRIS.....City and County Asssessor.

ASSESSOR'S OFFICE,
San Francisco, August 2d, 1869.

Hon. JOHN W. BOST,
Surveyor-General:

SIR: In conformity with an Act of the State Legislature passed in eighteen hundred and sixty-six (see Statutes, page 201), I herewith hand you a statistical report of the agricultural products of the County of San Francisco, together with a report of the manufactures and mechanical industries of this city and county for the year eighteen hundred and sixty-eight.

In making up this report I regret very much to have to inform you that similar reasons to which I referred in my report last year have almost entirely rendered the effort to gather statistics useless.

You will at once perceive that in many instances the report is a complete duplicate of last year. This is owing, as I have said before, to the manifest unwillingness on the part of proprietors and others connected with manufacturing enterprises, who are in possession of the correct data, to give the same. It is evident that the gathering of statistics by the Assessor has a tendency to prevent the necessary facilities so important and desirable in carrying out the instructions of the Surveyor-General.

There is evidently a prevailing notion with many of those persons referred to, that a full and correct report of their manufactures, etc., would have an effectual tendency to increase their personal property tax. Hence the oft reply (in answer to statistical interrogatories) is, "put us down the same as last year," and hence the duplicate.

Feeling a deep interest in a full and complete report from San Francisco County, I have endeavored to do all in my power to make it such.

In many instances, when I could do no better, I have referred to the United States revenue returns as an assistance in the matter, but you are well aware that even that method would not suffice in point of accuracy.

Early in the month of February I put one man on this work, exclusively, and have kept him continually at it up to this time. His time, as an Assessor, has been completely used up in what seems to me almost a useless work. There should be (in my judgment) a law of some force upon this subject, if at all the State desires information in relation to it.

Before submitting the following list, I beg to return you my thanks for the prompt and official manner in which you have instructed the work to be done, subject to your approval; and trust that during the next Legislature you may be able to secure the passage of a law by which correct statistical information may be obtained, if it must be through the Assessors' department:

Axle Grease Manufactory	1
Men employed	5
Rosin used, barrels	1,000
Butter used, pounds	12,000
Bellows Manufactory	1
Men employed	4
Horse power of engine	5
Value of manufactures	$10,000
Billiard Table Manufactories	3
Men employed	22
Tables made	97
Average value of tables	$450
Box Manufactories	5
Men employed	169
Lumber used (pine, fir and spruce), feet	5,600,000
Spanish cedar used	160,000
Horse power of engines	90
Brass Foundries	5
Men employed	85
Value of manufactures	$143,000
Boot and Shoe Manufactories	3
Men employed	122
Value of manufactures	$160,000
Breweries	21
Men employed	153
Beer made, barrels	120,300
Monthly capacity, barrels	9,750
Broom and Wooden Ware Manufactories	7
Men employed	66
Brooms made, dozen	35,000
Pails, dozen	6,500
Tubs, nests of four each	1,650
Zinc washboards, dozen	3,800
Barrel covers, dozen	450
Peach baskets, dozen	600
Sieves, dozen	800
Broom handles, dozen	26,500
Butter moulds, dozen	400
Cheese safes, dozen	450
Salt boxes, dozen	2,200
Syrup kegs	8,000
Powder kegs	6,000
Candle Manufactory	1
Men employed	11
Candles made, boxes	15,000
Capacity per year for candles, boxes	25,000

CARRIAGE MANUFACTORIES	10
[Statistical information generally refused, which was the case also in 1868. Hence no report of carriages.]	
CHEMICAL WORKS	3
Men employed	15
Nitrate of soda used, tons	250
Sulphur consumed, tons	450
Sulphuric and nitric acid made, tons	520
Capacity of works per day (sulphuric acid) tons	4
Capacity of works (nitric acid)	1
Sulphate of copper made, tons	125
CIGAR MANUFACTORIES	70
Men employed	1,232
Monthly capacity	3,500,000
Cigars made	38,692,000
CORDAGE FACTORY	1
Men employed	50
Horse power of engines	150
Hemp manufactured, tons	1,500
Capacity of works per year, tons	1,750
DRY DOCKS	2
[Please to see historical report of last year.]	
HAT AND CAP MANUFACTORIES	11
Men employed	26
Hats made annually, dozen	520
Caps made annually, dozen	1,400
FLOUR MILLS	12
Men employed	14
Flour made in 1867, barrels	529,400
Pearl barley, tons	60
Hominy, tons	80
Farina, tons	50
Oatmeal, tons	150
Groats, tons	53
Buckwheat and rye flour	950
Feed barley (ground), tons	5,000
Run of stone	45
Horse power of engines	711
Aggregate daily capacity of mills, barrels of flour	2,005
FURNITURE, ETC., MANUFACTORIES	8
Men employed	138
Horse power of engines	20
Value of manufactures	$170,000
GAS METRE MANUFACTORY	1
Men employed	4
Value of manufactures	$4,000

Glass Works	2
Men employed	86
Furnaces	2
Pots	15
Value of manufactures—not reported.	
Capacity of works per month—not reported.	
Glass Cutting Works	2
Men employed	6
Value of manufactures	$8,500
Gold and Silver Refinery	1
Men employed	5
Gold and silver refined, ounces	1,500,000
Hose and Belting Manufactory	1
Men employed	17
Hose made, feet	14,000
Belting made, feet	75,000
Horse collars made, dozen	500
Hose and belting leather used, sides	2,800
Collar leather used, feet	50,000
Iron Foundries and Boiler Shops	19
Men employed	1,093
Pig iron used, tons	9,880
Bar iron used, tons	1,854
Sheet and boiler iron used, tons	2,904
Rivets of iron used, tons	199
Iron Door, Shutter and Safe Shops	7
Men employed	84
Sheet iron used, tons	542
Bar iron used, tons	589
Cast iron used, tons	9
Cast steel used tons	4
Glue Manufactory	1
Men employed	21
Glue made, tons	500
Neatsfoot oil made, gallons	5,000
Curled hair made, pounds	20,000
Capacity per day for glue, tons	30
Capacity per day for oil, gallons	200
Last Manufactory	
Men employed	
Value of manufactures	$7,000
Lead and Shot Works	1
Men employed	18
Quantity of lead manufactured, tons	900
Quantity of shot manufactured, tons	200
Capacity of works per year, tons	2,000

Linseed Oil Works	1
Men employed	8
Flax seed used, tons	300
Oil made, gallons	25,000
Capacity per day for oil, gallons	900
Malt Manufactories	6
Men employed	18
Grain malted (barley) 100 pound sacks	68,250
Match Manufactories	5
Men employed	43
Matches made, gross	95,000
Mirror Silvering Works	1
Men employed	5
Silvering tables	4
Value of manufactures	$20,000
Pianoforte Manufactories	4
Men employed	19
Pianos made	152
Average value of each instrument	$350
Pyrotechnic Works	1
Men employed	4
Value of manufactures	$7,000
Rolling Mills	1
Men employed	58
Horse power of engines	300

[Further statistics the Superintendent could not give in due time for this report.]

Salt Mills	5
Men employed	35
Salt ground (domestic), tons	4,500
Salt ground (foreign), tons	2,800
Run of stone	8
Horse power of engines	77
Saw Manufactory	1
Men employed	35
Steel used annually, tons	50
Horse power of engine	25
Value of manufactures	$70,000
Sash and Door Manufactories	7
Men employed	261
Value of manufactures	$773,000
Saw Mills	8
Lumber sawed, feet	24,200,000
Saws run	49

Men employed	380
Horse power of engines	400
Soap Manufactories	16
Men employed	54
Soap made, pounds	4,032,000
Washing powder made, pounds	225,000
Capacity of works per month, pounds	1,000,000
Stave Factory	1
Men employed	22
Horse power of engine	18
Capacity, staves per day	3,000
Steam Marble Saw Works	1
Men employed	28
Horse power of engine	20
Saws run (one gang)	25
Value of manufactures—not reported.	
Sugar Refineries	3
Men employed	264
Horse power of engines	250
Raw sugar used, pounds	23,160,000
Refined sugar made, pounds	20,254,000
Syrup made, gallons	627,000
Capacity of works per day (raw sugar), pounds	165,000
Tanneries	15
Men employed	122
Tan bark used, cords	2,487
Hides tanned, number	16,350
Calf skins tanned, dozen	950
Kip and sheep skins tanned, dozen	2,054
Tool and File Manufactories	2
Men employed	5
Value of manufactures	$5,500
Trunk Manufactories	2
Men employed	30
Value of manufactures	$37,000
Type Foundry	1
Men employed	35
Value of manufactures	$28,000
Capacity of works per year	$50,000
Tub and Pail Manufactories	
Men employed	20
Power of engine, horse	20
Native timber used, cords	5,000
Barrel covers made	22,000
Salt boxes made, dozen	1,200

Sieves made, dozen	400
Pails of all kinds, dozen	3,500
Tubs, all sizes	20,000
Syrup kegs, in all	7,000
VINEGAR MANUFACTORIES	4
Men employed	16
Vinegar made, gallons	86,000
WIRE GOODS MANUFACTORY	1
Men employed	12
Value of manufactures	$25,000
WOOLLEN MILLS	3
Men employed	750
Horse power of engines	350
Sets of cards	29
Mules and jacks	40
Looms	122
Spindles	11,000
Blankets made, pair	94,500
Broadcloth, cashmeres and tweeds, yards	161,600
Flannel, yards	845,000
Flannel shirts and drawers, dozen	10,000
Wool used, pounds	3,250,000

Most respectfully submitted,

BEN. E. HARRIS,
Assessor, San Francisco.

TRANSACTIONS

OF THE

California State Agricultural Society

DURING THE

YEARS 1870 AND 1871.

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SACRAMENTO:
T. A. SPRINGER, STATE PRINTER
1872.

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BIENNIAL REPORT

OF

The State Board of Agriculture,

FOR THE

YEARS 1870 AND 1871.

T. A. SPRINGER.....STATE PRINTER.

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REPORT.

To His Excellency, Newton Booth, Governor of California:

Sir:—Since our last biennial report California has experienced two successive seasons of unusual drought. During the rainy season of eighteen hundred and sixty-nine and eighteen hundred and seventy, the entire rainfall in the central portion of the State was only thirteen and fifty-nine one hundredths inches, while in eighteen hundred and seventy and eighteen hundred and seventy-one it was but eight and forty-seven one hundredths inches, making the total rainfall for the two entire rainy seasons a trifle over twenty-two inches, or two and one half inches more than fell during the unprecedented dry seasons of eighteen hundred and sixty-two and eighteen hundred and sixty-three, and eighteen hundred and sixty-three and eighteen hundred and sixty-four, and but little more than the average rainfall for each year for the past twenty-two years.

Notwithstanding these facts, it is a source of congratulation that the agricultural, and indeed all the material interests of the State, have suffered much less during the past two years than they did during the corresponding seasons of eighteen hundred and sixty-two and eighteen hundred and sixty-three, and eighteen hundred and sixty-three and eighteen hundred and sixty-four. Indeed, taking into consideration the progress made in the development of our industries during the past two years, and footing up the results of that progress and of the two years' production, we find abundant reason for general congratulation among the people, and for universal gratitude to Him who visits the earth with both rain and sunshine, and who tempers the winds to the shorn lamb.

LESSONS OF THE DROUGHT OF EIGHTEEN HUNDRED AND SIXTY-THREE AND EIGHTEEN HUNDRED AND SIXTY-FOUR.

These occasional seasons of drought in California are not without valuable lessons—they are accompanied with benefits as well as disadvantages. In eighteen hundred and sixty-three and eighteen hundred and sixty-four the general failure of crops throughout all the central portions of the State, and the great scarcity of grazing and hay for stock, directed general attention to the low land constituting the deltas of our great rivers, and also to the high table lands located well up on

the Coast Range, and the Sierra Nevada Mountains. Those who explored in the latter direction found to their surprise and gratification an abundance of the most nutritive grasses, sufficient to feed all the stock then in California during the entire season. They found there countless valleys waving with excellent bunch grass, and extensive green meadows, furnishing nutritious and plentiful grazing for their flocks and herds, ranging almost to the very summits of the highest Sierras. These extensive high table lands have been the resort of thousands of cattle and sheep every Summer since that date, and have been a most valuable addition to the stock raising resources of the State. Those who turned their steps towards the low tide and swamp lands were scarcely less successful. They found thousands of acres of the most prolific natural meadows of which the world has any history, abounding in wild clover, timothy, and other native grasses. Besides pasturing large numbers of horses, cattle, and sheep during the Summer of eighteen hundred and sixty-four, it was estimated by this Board at that time, and upon reliable data, that there were cut and secured on these meadows, by parties in different portions of the State, not less than fifty thousand tons of a very fair article of hay, and that at least fifty thousand tons more were left standing upon them uncut.

The lessons taught by the dry seasons of eighteen hundred and sixty-three and eighteen hundred and sixty-four have not been forgotten by our people. The discoveries then made have been followed up and rendered available and valuable each year since that time, and now the elevated pasture lands of the mountain districts and the broad, natural meadows of the lowlands around about the confluence of the San Joaquin and Sacramento Rivers are among the most valuable portions of our State. These two great districts have contributed much during the two past dry seasons to lessen the effects of the drought which we, without a knowledge of them, would have experienced. Our farmers have also learned the great value of straw in keeping stock through the Winter season, and many of them have of late years been seeding down portions of their lands to that most excellent grass, alfalfa, so that we are much better prepared for an extreme dry season in the Summer, or an extreme wet and severe one in the Winter, than we were a few years since.

Although our official returns show that we had during the past dry season three times as many acres of land under cultivation in grain and other crops in the State as during the seasons of eighteen hundred and sixty-three and eighteen hundred and sixty-four, more than three times as many head of horses and mules, one-third more cattle, and more than eight times as many sheep and goats, yet the losses of stock from the effects of the drought of the past year were very light compared to the losses sustained in eighteen hundred and sixty-four.

These facts show a most gratifying improvement in the condition of our stock raising industries, and at the same time exhibit in a most striking manner the expansive nature and almost unlimited extent of our stock raising resources when properly understood and husbanded.

While upon this subject, we would urge upon our farmers the great benefits to be derived from a practice of keeping a few head of stock—sheep and cattle—on their farms to eat their grain straw, in preference to burning it, as is still the practice in many portions of the State. This straw, eaten and trampled by the cattle, may be made a source of direct profit to the farmer in furnishing our markets with beef when they are most poorly supplied and when beef commands the highest prices, and

also to contribute to the producing qualities and fertility of his soil, which, however rich now, will, in a few years of constant cropping and no manuring, be reduced to a state of poverty and unproductiveness. We would also earnestly urge the planting of greater breadths of land in alfalfa, and a more general practice of cutting and securing more hay and other food, such as pumpkins, and beets, and carrots, for feeding stock during the wet seasons. More barns and sheds, also, for the shelter of stock from the severity of storms during these seasons, are needed in all portions of the State, and money invested in this way will never be regretted. We think the experience of many during the present season has been such as to attest the correctness of the above recommendations.

AGRICULTURAL EXPANSION AND IMPROVEMENTS.

Not only have we during the past seven years developed stock raising resources heretofore unknown, and greatly improved the condition of that interest, while we have been adding rapidly to the number of our herds and flocks, but we have made even greater developments and improvements in the general horticultural and agricultural industries of the country. We have expanded, extended, and diversified our agriculture in a most gratifying manner. Had the drought of eighteen hundred and seventy-one found our agricultural operations confined almost exclusively to the most accessible and easiest cultivated valley lands of the State, as did the drought of eighteen hundred and sixty-four, and had we confined our efforts to the cultivation of the limited number of agricultural products to which our exertions were at that time principally devoted, the condition of our agriculture to-day, and indeed of our industries generally, must have been anything but gratifying. Step by step and year by year we have been learning that California, which we at first supposed was valuable only as a mining State, possesses a greater diversity of superior agricultural and horticultural advantages than any other State in the Union, and we think without boasting we may truly say, than any other equal portion of the earth's surface. In the earlier years of the State's history the cultivation of the soil was confined to the immediate river bottoms, and a few of the commonest vegetables and a little barley constituted the entire list of agricultural products it was deemed possible to grow or safe to experiment with, and fruit culture was confined to a few supposed favored localities immediately surrounding some of the old Missions in the southern portions of the State, and the varieties of fruit cultivated were exceedingly limited.

The immense plains constituting the next more elevated table of lands back from the rivers and stretching off towards the foothills in either direction, covered as they were each succeeding Summer with a luxuriant growth of wild oats, standing from four to eight feet high, and so thick on the ground that a man on horseback could scarcely force his way through them, were in those days considered of no value except as ranges for the countless bands of wild mustangs and wild horned, high hipped Spanish cattle that roamed over them. A few isolated, and in those days considered useless and foolhardy experiments were made with this class of lands by the cultivation of wheat and barley. Unexpected and gratifying success attended the timid experiments. The world knows the result. California wheat has revolutionized the grain markets of the world, as California gold has her commercial routes and money exchanges.

In the meantime California agriculture has continued gradually to expand and diversify; first stretching out over the next higher table of red lands, and then creeping slowly but cautiously and surely up the sides of the foothills, until we now find her luxuriating in the elevated valleys and spanning the mountain sides of the Sierras and Coast Ranges from the extreme north to the extreme southern end of the State. She is also extending her arms seaward, and embracing and reclaiming the islands and tide lands in and about our inland fresh water bays. And both on the hills and in the low lands during the past dry season have all kinds of crops done much better than in the open valleys.

DIVERSITY OF PRODUCTS.

Our products, instead of being confined to a few of the more necessary staples of life, have been cautiously and slowly, but surely and profitably, multiplying, until we now cultivate in greater or less abundance and perfection nearly every article of necessity or luxury that is grown from the earth within the temperate and tropical zones. We excel France and Italy in their vineyards and mulberry orchards, and equal them in the products of these orchards: wines, brandies, raisins, and silk cocoons. We are already competing with Germany and Austria in the cultivation of their greatest and most profitable products, beet sugar, and will soon be able to supply not only our own demand for this article but the entire demand of our sister States as well. From the success of experiments recently made in the cultivation of tea and coffee we have reason to hope the day is not far distant when we shall be able to cope with China and Japan in the production of the former, and with the islands of the Indian Ocean in the cultivation of the latter of these luxuries of the world. The cultivation of rice to a limited extent has been attended with such perfect success on some of our swamp and tide lands as to warrant the belief that this valuable staple can be grown here in quality equal to the best produced in the Carolinas themselves, and limited only by the hundreds of thousands of acres of these lands within our borders.

Cotton and the ramie plant have both been so successfully cultivated in the State within the past few years that there can no longer be entertained any doubt that we shall soon be able to excel in the production of the former of these vegetable fibres the best cotton districts of the Southern Atlantic States, and dispute with China and the Asiatic islands the monopoly they have so long sustained in the cultivation of the latter.

New Zealand flax-hemp and common flax-hemp have also been successfully cultivated here in various portions of the State; and while the latter is grown very extensively and profitably for the seed, the time when all will be extensively cultivated for their fibres is only delayed for want of proper manufacturing facilities to render those fibres available.

It has long since been proven that the best tobacco lands of Virginia cannot outdo us in the production of this article in quantity; and by the perseverance and skill of a citizen of our State it has this year been successfully demonstrated that we can equal if not excel her in quality.

At our last State Fair were shown some samples of opium which, upon being tested by some of our most skillful chemists and physicians, were pronounced equal to the best imported article, and we are assured

by the exhibitors that its production in quantity at the prices it commands may be made very satisfactorily profitable.

The cultivation of the castor bean and the manufacture of the oil is becoming a permanent and remunerative business in some portions of the State; Yuba County alone having grown the last year over six hundred thousand pounds of beans, while the product of the State was over seven hundred thousand pounds. This, at four cents a pound to the producers, paid them twenty-eight thousand dollars. There is no reason why we should not extend this business and become large exporters of the oil, as nearly all portions of the State are equally well adapted to raising the bean.

The cultivation and preparation of chickory has also been successfully carried on in Yolo County for a number of years past, by a company of Germans, and is growing into a business of no little importance. The product of the firm the last year was one hundred and thirty-five tons, valued at twenty thousand dollars. Other counties are also engaging in the business to some extent—five thousand dollars' worth having been grown and prepared in San Joaquin the past season. The soil of all our river bottoms of a sandy loam is well adapted to this product, and it can therefore be extended almost without limit, as its demand for commerce is coequal with that of coffee, with which and as a substitute for which it is used.

English mustard is being produced in some of the southern counties quite extensively, Monterey alone having produced the last year nearly thirteen thousand bushels, valued at over twenty thousand dollars, while in Santa Barbara there was gathered forty thousand dollars worth of wild mustard seed, and in other counties a considerable quantity, swelling the value of the product of the latter variety alone in the State to the sum of sixty thousand dollars.

The value of the broomcorn crop for eighteen hundred and seventy, produced principally in the Counties of Yuba, Sutter, and Amador was over forty-five thousand dollars.

FRUITS.

As to the production of fruits and nuts, both of the temperate and tropical climates, there is probably no other equal area of the earth's surface, embraced in a single body or laying together, that can excel or equal our State in the number of kinds or general good qualities of the varieties produced. A careful comparison of the apple grown in the elevated foothills of our State with the same varieties exhibited at our last State Fair from the States east of the Rocky Mountains, ranging from Massachusetts to Kansas, proved most conclusively that for general good qualities of flavor and keeping, our fruit is equal to the best, and in size, form, and color, and general inviting appearance, is far superior to any. While the apples from all the other States show the effects of the ravages of insects more or less and in one way or another, ours are perfectly free from all damage or imperfections caused by these fruit pests. The extremes of our climate, from the warm valleys of the coast foothills to the high altitudes of the Sierras at which apples are cultivated successfully, are so great that with a little care in selecting varieties, and in preparations for keeping this most valuable of fruits, we may have our markets supplied with fresh apples the year round. Our peaches, plums, prunes, figs, apricots, nectarines, cherries, strawberries, blackberries, raspberries, and gooseberries are universally admired and

highly relished by all who visit our State during the fruit season, while the superiority of our pears and grapes has created a market for them everywhere, limited only by the means of transportation and the distance to which they can be conveyed in good condition.

Of the tropical fruits, we have for years and almost centuries at some of the old Missions in the southern portion of the State, been producing oranges, lemons, limes, and olives, and they are now becoming almost as common in the orchards of those localities as apples, pears, and plums, and are found in the markets of all the principal towns of the State, and are preferred to any grown elsewhere and imported. Nor are these delicious fruits confined to the south, but are being grown successfully in all parts of the State as far north as Butte County, and all along the foothills on either border of the great central valleys.

In many of the southern counties successful experiments are being made with other valuable varieties of tropical fruits and exotics. The pineapple, the banana, the mango, the cocoanut, the plantain, the loquat, the Chinese guava, yellow jambe, the date, and some other highly prized varieties of fruit, have been perfected in the open air in this portion of the State. As it is an important fact that many of the most valuable fruits and berries now cultivated extensively in the United States are natives of a more mild climate than that in which they are found to do the best, we feel warranted in recommending continued efforts in the cultivation of the above named fruits and in the introduction of other valuable kinds from the tropical countries.

STOCK.

In stock, our California bred horses are proving superior in speed, endurance, and general good qualities to the best raised in the Atlantic States or Europe. The policy of our State and District Agricultural Societies, in giving valuable purses to bring out the speed and bottom of young and untried horses of all breeds and classes, is having a most beneficial effect in the development of the most desirable and valuable qualities of this noble animal.

As the highest value of the horse is measured by his speed performances, and as his ability in this direction depends as a general proposition upon the judicious crossing of the best blood and highest type of nerve and muscle, and as this happy union of qualities can only be determined by severe and actual test on the track or road, it is of the highest importance to those who make the breeding of horses a business for profit that some perfectly unbiassed and fair system for the trial of the speed and endurance of young horses should be inaugurated.

The Agricultural Societies of this State, recognizing the development of the best and most valuable qualities of the horse as much a part of their duties as the improvement of cattle for the production of beef or butter and cheese, or of sheep for the production of wool and mutton, have undertaken to inaugurate a system by which these valuable qualities may be honestly and thoroughly tested. Their efforts in this direction have been so generally successful that millions of dollars have been added to the value of the horses of this State, while at the same time most valuable lessons in breeding have been inculcated. If it is better to double the intrinsic and serviceable value of our horses than to double their numbers without increasing their value, then this action of our Agricultural Societies is commendable.

Our short horned cattle, born and bred here, excel their foreign bred

and imported ancestors, insomuch that they are coming in demand for export to improve the original stock in the countries from which they are derived.

Our fine wooled merino sheep suffer no depreciation when compared with the best flocks of Germany or France, and their fleeces are as much sought after by manufacturers of fine cloths as the best clips of Spain or Australia.

Our Cashmere and Angora goats become more vigorous and hardy than in their native countries, and their fine silky fleeces of mohair keep pace with the improvement of the animals themselves.

In such an expansion of our agriculture and such an improvement in its diversification and condition as we have made since the drought of eighteen hundred and sixty-four, is to be found the principal reason why under the influence of an almost equal drought of eighteen hundred and seventy-one, all our industries have suffered so much less than they did at that time.

THE WORK OF THE STATE AGRICULTURAL SOCIETY.

All this expansion, all these improvements in the modes of culture and in the diversification of crops, in the introduction of better breeds of stock and new and better varieties of fruit, is more or less due to the exertions of the State Agricultural Society, working through its annual Fairs, reports, and transactions, and its extensive correspondence. There has not been an advance step taken by our agriculturists, either towards the foothills and up the mountain sides, or down the rivers to the islands and tide lands, that the State Agricultural Society has not pioneered the way and faithfully and truthfully pointed out the advantages and disadvantages of the new enterprise about to be undertaken.

THE SOCIETY'S ANNUAL FAIRS.

At these annual Fairs have been collected together yearly in one view the many rich products of the varied soils and climates of our mountains and valleys, of our sea coasts, tule and swamp lands and river borders, affording our farmers, horticulturists, and stock breeders rare opportunities for observing the advantages of each particular location, the peculiar products to which its soil and climate are best adapted, of comparing notes, interchanging of experiences and opinions, and obtaining useful hints and valuable information for their future benefit and guidance.

At these Fairs the stock breeder, in whatever class, has presented to him invaluable lessons in breeding, feeding, and managing stock. He sees at these annual gatherings of the society the plump, long bodied, short legged, and deep hammed Berkshire; the fine haired, small headed, short faced, and more delicately formed Suffolk and Essex breeds; the thickset, easily kept, and easily fatted China pig, and many other distinct varieties of swine, and determines for himself the breed or cross best adapted for his locality and circumstances. He beholds the fine wooled, closely made, compact Spanish merino; the medium sized, square quartered, middle wooled, mutton bearing Southdown; the large, heavy built, strong boned, and long wooled Cotswolds, and other pure breeds and crosses of sheep, and by inquiry and observation learns all about

their points and habits, and buys of this or that distinct breed or cross, to suit his particular location and purpose. He is here made acquainted with the majestically made, broad, straight backed, deep chested, velvet coated, short horned, beef making Durham; the more delicately formed, thin necked, milk giving Ayrshires and Herefords; the wiry and hardy looking, symmetrically formed, domesticated, butter making Jerseys and Devons; and selects the breed or cross adapted to beef raising, milk selling, or butter and cheese making, according as the one or the other business is most agreeable to his inclinations or profitable for his particular location or circumstances.

Here also are displayed before him the different breeds and crosses of the horse, from the beautiful, peerless, clean, long legged, fleet footed, deep chested, silken coated, high mettled, and long winded thoroughbred, to the heavy quartered, thickset, round bodied, square, wide shouldered, heavy legged, long coated English draft horse. He sees here illustrated and exemplified the great benefits and improvements brought about by judicious, skillful, and scientific breeding and careful crossing, and a long continued and sytematic exercise and training, for the development of speed and endurance on the one hand, or on the other for the attaiment of great strength and power, and slow but heavy service and easy keeping.

He goes home and applies the lessons of the Fair to practice among his own stock, and by careful thought and close observation discovers new and valuable points or principles; and following up the new train of thought and action to which the Fair has introduced him, in a few years he becomes a prosperous stock owner and breeder, a benefit to himself, his neighbors, and the State. Indeed, all classes of our people annually attend the State Fairs, and they are becoming to all a source of pastime and pleasure and a means of universal improvement.

The enterprising mechanic, the ingenious artisan, the skillful-inventor, the tasteful artist, the profound professional man, all here find food for reflection and useful lessons for improvement, each in his own particular calling or occupation.

THE REPORTS OF THE SOCIETY.

These biennial publications made by order of the Legislature are intended to be a true record of the industrial advancement of the State, and at the same time it is their aim and object to lead and direct these industries. In the effort to accomplish this important work, it has been found expedient to make up in as concise a form as possible the full transactions of the society for each year, including a record of the new products introduced, new modes of culture adopted, and new facts brought to light in each and every department of industry in the State. Also, to show the many advantages our State presents to the industrious immigrant who is seeking a new and permanent home, where he may accumulate about him the conveniences and comforts of life with the least labor and exertion.

These books are distributed free of charge to all members of the society and to all other applicants throughout the State, and it is believed such distribution has accomplished much good in stimulating and directing in a profitable channel the energies of our people. They are also sent in exchange to all other similar societies in the United States and in many of the European counties, and to public libraries and private individuals who apply for them; and in this way we have abundant proof

that they are accomplishing a valuable work in the interest of immigration by spreading information and attracting attention to our valuable resources.

We would here suggest that a great amount of valuable information is annually collected through the channels open to the society for an annual publication, instead of a biennial one, and that such annual publication would be of but little additional expense to the State compared to the increased benefits that would result therefrom. Nearly all the State societies of the Atlantic States issue annual publications, as does also the Agricultural Department of the General Government; and certainly there are many more and stronger reasons why our society should do so than can be urged in favor of the practice in the old Eastern States. In those States the systems of conducting all agricultural operations have been reduced to a science or art by a series of experiences handed down from father to son through many generations, until it would seem but little more was to be learned. They are not seeking to add to their already crowded population by offering inducements to immigrants to settle among them, and yet they keep up their annual publications and consider the money thus used well spent. Although we have in a few years made great improvements and advancement in the development of our agricultural resources, and learned much that will be of great value to us in the future, yet we have but just begun to read the great book of knowledge upon this subject which the future will open to us. We have abundant undeveloped resources, and but a very few people, comparatively, to develop them. An increase of population of the active, working, intelligent kind, is one of our greatest necessities, and there is no more effectual or economical way of securing that class of immigration than by publishing and advertising to the world, and particularly to the class we want, the many advantages we offer them. It is from this class of people we receive the most frequent inquiries, and it is found that the most satisfactory manner of answering such inquiries so as to produce a favorable impression and action is to send in answer a late volume of the society's transactions. But when such transactions are published but once in two years much of the matter contained in any particular volume must of necessity have been collated from one to two years before publication, and if the volume is two years old at the time of sending them, such matter would be four years old at the time of using it in answer to a present inquiry. The absurdity of such a slow process of publishing to the world our rapidly developing and as rapidly increasing resources and advantages must be apparent to every one who has the true interests of our State at heart, and who will give this subject a moment's thought.

In this connection we will mention that we have already received numerous orders for the forthcoming transactions, one of which is for a thousand volumes for distribution by the California Immigrant Union. As this volume contains more than an ordinary amount of valuable statistical information gathered from various public and private sources, and an unusual number of able and exhaustive essays on various agricultural subjects of great present interest, some of which, to render them more valuable and practical, require to be illustrated by wood cuts, we would recommend the printing of at least five thousand volumes, and that provision be made for procuring the necessary cuts for illustration. We would also recommend that provision be made by the present Legislature for the annual publication hereafter of the society's transactions.

CORRESPONDENCE.

The correspondence of the society is annually increasing, both with our own citizens and District and County Societies and Farmers' Clubs and with similar societies in other States of the Union and foreign countries. This correspondence embraces every conceivable subject relating to the multitudinous industries of the earth. To answer all inquiries in a reliable and satisfactory manner the Board regard as one of the important objects of the organization of the society, and have always made it one of the leading duties of their Secretary to cultivate correspondence wherein information can be obtained or imparted. Carrying out this idea, our Corresponding Secretary early last Spring opened a correspondence with the State Agricultural and Horticultural Societies of nearly all the Atlantic States, with a view to bringing about an exchange of products, particularly fruit, for exhibition at the Fairs of the several societies to be held during the Fall months. Many of the societies addressed responded favorably to the proposition, and the result was that at one Fair we had on exhibition fruit—principally pears and apples—from Massachusetts, Connecticut, New York, Virginia, Michigan, Illinois, Indiana, Iowa, Kentucky, Wisconsin, Minnesota, Kansas, and Nebraska. This exhibition of fruit from so many of the States formerly the homes of so many of our citizens constituted one of the most interesting and instructive features of our Fair. It afforded our people an opportunity of comparing directly the fruit grown in their old homes with that grown in the homes of their adoption. And although in the recollections of younger years and of childhood to many of our people the Eastern fruit had been painted with brighter colors and relieved with more delicate tints, and although in such recollections more agreeable flavors and pleasant acids had been attributed to it, yet when these fruits were brought in direct contact with those grown in our own State, when the eye could behold and the taste compare, these impressions of a former day were quickly dispelled, and the almost universal verdict was in favor of our California grown fruit. Some of the Eastern apples were pronounced better than some of ours; but as to pears, ours were incomparably better than any others exhibited.

Our fruits—principally apples, pears, and grapes—were also sent East and exhibited at the Fairs of most of the States above named, and at the Fair of the American Pomological Society, held at Richmond, Virginia, and attracted the universal attention of the people in attendance, and the very general comment of the Eastern press. The verdict by the Eastern people and press was generally more favorable to our fruit than that of our own. Our pears and grapes were natural wonders. It required very positive assurance to convince many intelligent people that our grapes were not grown under glass. At the Fair of the American Pomological Society our State was most highly complimented, and at a banquet given by the City of Richmond to the delegates in attendance the following sentiment was unanimously approved: "California—the real or modern Hesperides. Her fruit trees and vines, with their roots in a golden soil, bear a golden fruitage."

We have every reason to believe that by this exchange of fruits with these Eastern societies many advantages will result to our State, by attracting to it the attention of people who will be induced sooner or later to make it their permanent homes.

As another result of a well directed correspondence, there were exhibited at our last State Fair many of the industrial products of China and Japan, and a number of Commissioners from the Japanese Government, including a Special Commissioner of Agriculture, attended the Fair in person, with an American as interpreter and agent. These Commissioners were well pleased with our exhibition, and with the evidences of agricultural life and prosperity generally. Among the first visible fruits of this courtesy shown these people we may mention the fact that a number of fine merino sheep and good blooded cattle have been purchased by the Japanese and shipped to their own country, and that some of the most intelligent and wealthy young men of Japan have been sent out to this State for the purpose of learning practically the stock raising business, and becoming familiar with our system of agriculture generally; that a large number of fruit trees of various kinds have already been ordered from our nurserymen for the Japanese market for the present season, and that the prospect now is good that Japan will very soon become one of our best customers for our best blooded horses, cattle, and sheep, and for a large amount of our nursery products, garden and field seeds, agricultural implements, etc.

PRACTICAL FIGURES.

We have been stating in general terms the adaptability of our climate to an almost endless variety of valuable products, and the wonderful fertility of our soil. To show that we have not overstated facts, we will here introduce a few practical figures derived from reliable official sources.

By a careful estimate of the value of the agricultural products of our State for the year eighteen hundred and seventy—a year of drought—as returned by the County Assessors to the Surveyor General, we find that value to be in round numbers sixty millions of dollars. Feeling a little in doubt about the correctness of our figures, we asked the United States Marshal for this State for the agricultural statistics of the State as obtained through his census agents. His answer and table of statistics very kindly furnished will be found in the papers accompanying this report, and by them it will be seen that his estimate is identical with our own. By the same returns the number of acres under cultivation for that year was two million five hundred and ninety-six thousand six hundred and twelve, which being divided into the sixty million of dollars—the whole product value—gives as a result twenty-three dollars and ten cents the value of the product of each acre cultivated. We would here state that this estimate of value is not based on export prices, but on the prices actually obtained by producers that year.

Again: by the returns of the Census Agent there were under cultivation that year twenty-three thousand three hundred and seventy-five separate farms. Allowing each farm to have a separate owner or proprietor, we have twenty-three thousand three hundred and seventy-five farmers, or joint proprietors and cultivators of the soil. If we divide the sixty millions of dollars equally between this number of proprietors, each will have received as his gross profits two thousand and fifty-six dollars and seventy cents.

AGRICULTURAL PRODUCTS OF EIGHTEEN HUNDRED AND SEVENTY-ONE.

Owing to the extreme drought the past year, it is probable that the

aggregate agricultural product of eighteen hundred and seventy-one was somewhat less than in eighteen hundred and seventy, but in consequence of the higher prices obtained for most of these products it is estimated that the total value of the year's crop was not much less than in eighteen hundred and seventy. For instance: more fruit has been exported this year than ever before, and much more money has been realized for the crop. The wine crop was fully equal in quantity to that of eighteen hundred and seventy—estimated at three millions of gallons—and much better in quality, and a decided improvement in prices has been obtained, giving to the producer a larger return. Again: the wool product of eighteen hundred and seventy-one was in round numbers twenty-five millions of pounds, against nineteen million four hundred and seventy-two thousand six hundred and sixty pounds for eighteen hundred and seventy, being an increase of five million five hundred and twenty-seven thousand three hundred and forty pounds, or a little less than twenty-nine per cent. While the average price paid to producers in eighteen hundred and seventy-one was about twenty-seven and one half cents per pound, that paid in eighteen hundred and seventy was only nineteen cents per pound; so that while the product of eighteen hundred and seventy brought the producers three million six hundred and ninety-nine thousand three hundred and five dollars, the product of eighteen hundred and seventy-one brought them about six million eight hundred and seventy-five thousand dollars, or over fifty per cent increase.

We doubt whether another State in the Union can make as good a showing of agricultural products and values under such disadvantageous circumstances.

INCUMBRANCES TO THE STATE'S PROSPERITY.

While it is a source of just pride and gratification thus to review the achievements of the past, we cannot close our eyes to the fact that our State in every stage of her industrial history has labored under many disadvantages. While some of these have disappeared by the lapse of time, and others have been removed by the Acts of the Legislature and the decisions of the Courts, others still, of a serious and threatening nature, remain to retard her progress in the way of material prosperity. With eighty million of acres of tillable land within our borders, and as we have seen of the most fertile and productive character, we are actually cultivating less than three million acres; and the total population of the State is but five hundred and sixty thousand two hundred and twenty-three persons. To make this picture still worse for the prospect of a general development of our agricultural resources, upon which our prosperity mainly depends, over one fourth of this entire population, or one hundred and forty-nine thousand four hundred and seventy-three, are residents of one city—San Francisco—and nearly one half, or two hundred and forty-nine thousand seven hundred and thirty-eight, are residents of twenty-four of our larger cities and towns, leaving but three hundred and ten thousand four hundred and eighty-five as residents of the smaller towns throughout the mining and rural districts of the State, and actual occupants of the soil. In view of these facts it is probable that our estimate of twenty-three thousand three hundred and seventy-five as the actual owners and cultivators of farms in the State, is rather above than below the truth. Why this scarcity of population in the rural districts? Why so few farmers in a State possessed of such

vast quantities of unoccupied and uncultivated fertile lands and a climate not excelled in the world? Does not farming pay here? There is no place in the world where the average farmer does better, as we have shown above, than in California. Is it not an agreeable and easy country to farm in? There is no country on earth where the farmer can accomplish so much with so little labor. We have no snow, no cold, freezing Winter seasons, lasting from four to six months every year, during which the farmer is kept hard at work to provide the necessary firewood to keep his household comfortable, and in housing and feeding his stock, the hay and grain to secure and preserve which he has been compelled to labor hard the previous six months of the year. We have here but two seasons—the rainy season or seed time, and the dry season or harvest. As a general thing there is not over forty days in the entire year in which the farmer cannot without any inconvenience work in the field; and we are warranted by facts in saying that the judicious and economical general farmer can, in California, on say fifty acres of land, and with his own individual labor and a single team, raise and market more than twice the amount of general agricultural products, and at double the net profits, as he could in the State of New York or any of the Northern Atlantic States.

If in addition to such a favorable showing of natural advantages for California we could go forth and publish to the world another very important fact, that we have within our borders from thirty million to forty million acres of land equally as fertile and valuable and as favorably located as much of that which is now under cultivation, and that all this land was open to purchase in lots of from eighty to one hundred and sixty acres each, and at the Government price of one dollar and twenty-five cents per acre, we are satisfied it would not be three years before our State would contain half a million of the happiest and most prosperous agriculturists in the world, engaged in the cultivation of all the various agricultural and horticultural products to which our soil and climate are so well adapted. Then the idlers in our towns and cities would seek and find constant and profitable employment in the country, or would themselves become proprietors and independent cultivators of farms and useful and valuable members of the community. Then our valuable water privileges, of which we have more than all New England combined, would be occupied and utilized, and the ring of the anvil and hum of the spindle would be heard all over the State. Then, too, would come commerce, and natural and permanent prosperity would return to the cities.

LAND MONOPOLIES.

But what is the position of the millions of acres of uncultivated lands throughout the State? Why are they uncultivated and unproductive? Is it true that these lands are monopolized by individuals and held in large bodies, of but little profit to their owners, and at such immeasurable disadvantage to the State? What are the facts? By reference to some statistics collected by the State Board of Equalization for the illustration of another subject, we find that in the County of Colusa there were assessed, in the year eighteen hundred and seventy-one, to six different ownerships, one hundred and sixteen thousand six hundred and forty-seven acres of land; in the County of Tehama, to five different ownerships, forty-eight thousand seven hundred and ten acres; in the County of Butte, to five ownerships, sixty-four thousand three hundred and fifty-six acres; in the County of Monterey, to eight ownerships, one

hundred and twenty-two thousand three hundred and forty-three acres; in the County of San Luis Obispo, to eleven ownerships, two hundred and fifty-one thousand two hundred and sixty-six acres; in the County of Santa Barbara, to thirteen ownerships, four hundred and ten thousand nine hundred and seventy-three acres; in the County of San Diego, to seven ownerships, two hundred and eight thousand seven hundred and fifty acres; in Kern County, to nine ownerships, three hundred and five thousand five hundred and forty-two acres; in Fresno County, to seven ownerships, two hundred and eighty thousand six hundred and eighteen acres; in Merced County, to seventeen ownerships, five hundred and eleven thousand three hundred and six acres; and in San Joaquin County, to thirteen ownerships, three million one hundred and thirty-five thousand acres.

Thus in eleven counties of this State, statistics collected by this Board, not with a view of showing the large ownerships of land, but for another object entirely, develop the astonishing fact that one hundred proprietorships own and control five million four hundred and sixty-five thousand two hundred and six acres of land, or an average of fifty-four thousand six hundred and fifty-two acres each. This is three million eight hundred and sixty-eight thousand five hundred and ninety-four acres more land than the whole amount under cultivation in eighteen hundred and seventy, when the agricultural product of the State was valued at sixty million dollars. Divide these possessions of these one hundred proprietorships into farms of one hundred and sixty acres each, and they would make thirty-four thousand one hundred and fifty-seven farms. Let these farms be occupied each by a family of five persons, and there would be added to our rural population and producing classes one hundred and seventy thousand seven hundred and eighty-five persons.

If each one of these farms was cultivated and made to produce at the same rate per acre that our land under cultivation in eighteen hundred and seventy did produce, the additional value to our annual agricultural products would be one hundred and thirty-one million one hundred and sixty-four thousand nine hundred and forty-four dollars, or very nearly this sum, as they are now made to produce but very little to their owners. This last sum would also be about the measure of the permanent annual addition to the taxable property of the State. Again: this land is now assessed, as stated by the Board of Equalization, at about an average of two dollars per acre. If divided into farms as supposed, it would at least add ten dollars an acre to its annual assessed value, and thus would add fifty-four million six hundred and fifty-two thousand and sixty dollars to the permanent wealth and taxable property of the State. These lands have cost their owners on an average from one dollar to one dollar and twenty-five cents per acre, and are now, a very large portion of them at least, for sale in lots to suit purchasers at an advance figure, though at a very low or moderate price in comparison to their real value—say from two dollars to eight dollars per acre, according to quality and location. What we have stated in regard to large ownerships of land in the counties named, is to a certain extent true of all the counties in the State. It is also true that the Central Pacific Railroad Company own some three million acres of land in the State, granted to them by the General Government in aid of the great enterprises which they have undertaken and accomplished. The lands of this company are also for sale in lots to suit purchasers, and at about the same rates per acre as those of the private parties to which we have

referred. These, then, are the facts, that very nearly all the lands in the State have, in one way or another, passed from the ownership of the Government to that of private parties, and that the prices of these lands are advanced considerably above the Government prices for public lands in this and in other States. These are the facts, and this is the length and breadth of the land monopoly in California. These are the present facts with which we as a people, and with which the State of California have to deal. It is unnecessary now to complain of the legislation that opened the way to this state of things. It is a fruitless labor to inquire into the management of our State and National Land Offices, which has encouraged the accumulation of these lands in a few hands and in large bodies, rather than in the hands of small farmers, except to prevent the continuance of such management. We have to deal with this question as it now exists, and the best way is to look at it in a practical common sense manner. It interests the people and the State now mostly and almost wholly as it relates to and has an immediate bearing upon another question of great importance—the question of

IMMIGRATION.

There seems to be a universal opinion in California that the increase of population by the introduction of an industrious, working, thriving people, would add greatly to the general prosperity of the State. This opinion we believe to be well founded, and that it is to the general interest of all as well as the duty of all to encourage the immigration to our State of that class of people.

Does the fact that the millions of uncultivated but rich and fertile lands of the State belong to individuals instead of the General and State Governments, change this general interest and this general duty of our people? Both the General Government and the State have sold their respective portions of these lands, and have received the full price demanded for them, so that we as a people have no longer any direct interest in these lands or in their ownership. But we have an interest, and a vital one, in their cultivation and improvement, and in the additional wealth and prosperity we have shown such cultivation and improvement will bring to the State.

Will the fact that the sale of these lands at advanced rates over the Government prices brings riches and wealth to some of our enterprising citizens injure any of us as individuals, or detract from the great benefits that will thus accrue to us as a people or State? On the contrary, will not the wealth of these individual citizens add so much to the general wealth and taxable property of the State? Will it not be equivalent, indeed, to just so much additional capital put in circulation among us, to develop our latent resources and add to our general prosperity? Who, then, will be wronged by the encouragement of such immigration, even at the expense of some of the public revenue? Will not all the lands within the State the title of which is in individuals be compelled to bear their portion of such expense? Most certainly they will. If, however, these titles were still in the General Government and State, they would be exempt from taxation for the purposes of encouraging immigration, as well as for all other purposes. Then, so far as our people or State is concerned, is it not rather a benefit and advantage than an injury that these lands are private property, and

consequently liable to bear a portion of the expenses of the State Government, as well as any outlay for the encouragement of immigration to settle up and bring additional wealth and capital into the State?

If it be objected that these lands are not honestly or proportionally assessed and taxed, this is another and separate question, and one that may be remedied. Let the State remedy the objection, and see to it that they are properly and proportionally assessed and compelled to pay taxes on every dollar of their "full cash value," the same as other property. Nor should their owners complain at this, or even at a proportionally high assessment and taxation, while a portion of the funds realized from such taxation is appropriated to encourage immigration, and thus bring to them a greater than an equal share of the benefits of such immigration by furnishing them customers for their lands and enhancing their value. It is true that these lands are held at higher rates than Government lands in other States, and that it will cost immigrants more to obtain lands here than where they can buy at the Government prices. But we would remind the intelligent immigrant that the lowest priced article, even in land, is not always the cheapest. The agricultural lands of California, as a general thing, are all ready for the plow. No clearing of heavy timber is required, no obstruction whatever to immediate cultivation is presented. And, as we have shown, California is one of the most favorable countries in the world for the poor farmer to get a start in. We have proved by official statistics that the average product of all the land under cultivation in eighteen hundred and seventy, a year of drought, brought to the producers the handsome sum of twenty-three dollars and ten cents per acre. Well may we ask, where can the industrious immigrant, rich or poor, do better? Where can he do half as well? There is no difficulty here in obtaining any quantity of land on most favorable terms as to time. With the proceeds of the first crop produced and sold within a year from the time of purchase, many a man has paid for his farm and bought as much more land, or built a comfortable farm house and barn; and the opportunities for doing just as well by any enterprising farmer are almost without number in all portions of the State. It is true that a considerable portion of the lands now for sale at very low rates, say two dollars per acre, are not considered of the best quality for the production of cereals, but are well adapted to vineyards, silk and fruit culture of all kinds, and when brought under cultivation in these specialties, never fail of a crop. In this connection we will state it as a historical fact, that since the first introduction of the vine into the State, at the first settlement of our old Missions, there never has been a failure in the grape crop, nor has the fruit crop ever failed in the State. These very lands that can now be had at two dollars per acre will return a greater profit to the skillful and economical manager than lands in France or Italy, or other European countries, or in any of the Atlantic States, held at from one hundred dollars to three hundred dollars per acre, if devoted to wine, silk, raisin, or general fruit and nut culture.

It is also equally true that much of this land that can be had at from five to ten dollars per acre is equally as valuable for the production of the cereals as lands now under cultivation in these grains, and from which the owners realized this season from thirty dollars to forty dollars per acre. Again, there are already railroads projected and being built through almost every section of the State in which any of these lands are located, so that markets for everything produced will soon be or are now within easy distance. General plans for irrigation

are also being adopted and pushed forward to completion, thus placing the certainty of water within the control of every cultivator, and rendering a crop of any kind beyond the possibility of failure. On the whole, we are well satisfied that no other State in the American Union presents greater inducements or more certain prosperity to the enterprising, skillful, and economical immigrant than does California. We are also well satisfied that whoever persists in publishing to the world the darkest side of our condition in California is not only injuring the best interests of the people and the State, but is also doing a great injury to those who would otherwise come and make their homes among us and enjoy the unequaled advantages and prosperity that here awaits them.

THE FENCE QUESTION.

There is perhaps no subject at present undergoing more earnest discussion in the agricultural communities of the State than the laws regulating the building of fences. If the general expression of the press be a true indication of the wishes of the people, we must conclude that there is a pretty general disposition to abandon the system of laws and customs that have heretofore prevailed in this country and State, and adopt the European system in regard to the protection of growing crops. While it is the province and desire of the Board of Agriculture to extend to all the industries of the State a fostering care, and equal protection and encouragement, we cannot ignore the many considerations urged in favor of the change proposed. If it be found upon an unbiassed examination of this subject that such a change will bring greater benefits to the greater interests, or the greater good to the greater number of our people, without inflicting severe wrong or hardship on other interests, then the sooner the change be made the better. It is a contest between two classes of property—in general terms, grain and cattle. It is claimed by the owners of the former that as grain or growing crops of all kinds are passive and cattle are aggressive, that the natural rights of property and the equities regulating the management and relations of the same, as well as the moral obligations of the owners, would require that the latter should be restrained from committing depredations on the former, and that whatever expense is necessarily incurred in furnishing the means of such restraint, such expense should be borne by the owners of the latter, and consequently that all laws founded upon a different principle should be repealed, and that laws recognizing this position should be enacted and enforced.

RELATIVE PROPERTY CONSIDERATIONS.

As we have before stated in this report the returns of the County Assessors and the census reports fix the value of the agricultural products of the State for the year eighteen hundred and seventy, including grain, roots, and wine, and excluding fruits, at sixty million dollars. By the same returns, the whole number of grape vines and fruit trees of various kinds in the State is thirty million nine hundred and ten thousand and forty-six. Valuing these at one dollar each—and this is certainly below their real value—and discarding the odd thousands for convenience, we have an additional property of thirty million dollars—making ninety million dollars' worth of growing crops and property requiring protection from the ravages of the stock of the State.

Now, taking the whole number of horses, cattle, sheep, and goats in

the State (leaving out the hogs, because the principle is already recognized and enforced by the present laws as regards them) and placing their value at their market prices, and we have the total of that value in round numbers—thirty million dollars—or just one third the total value of the other agricultural products or growing crops.

Here, then, we have among us thirty million dollars of aggressive property and ninety million dollars of passive, owned to a great extent by different parties. If the former are allowed to roam and seek their living without restraint the latter will necessarily, to a great extent, be destroyed; and the question arises upon which class of property or upon which set of owners shall the expense of such necessary restraint be placed? Not taking into account the amounts or values of the different classes, and only considering their nature, a disinterested umpire would naturally say the expense must be paid by the cattle or their owners.

Again, in all associations of property for the general gain—incorporated companies for instance—the greater number of shares or the majority in value controls and manages the whole interest, and that control and management is uniformly one of the conditions of the associations. Why should not the same rule of action obtain in this case and be enforced by the State in the management of the property of its citizens, as the State, so far as property relations is concerned, is but an extensive incorporation, founded for the purpose of enforcing the rights and equities of those relations.

EXPENSE OF FENCES.

The number of acres of land under fence in the State, according to Assessors' returns, is four million nine hundred and eighty-two thousand nine hundred and forty-two. This fence has not cost less than three dollars per acre for every acre inclosed, or a sum total of fourteen million nine hundred and forty-six thousand eight hundred and twenty-six dollars, a trifle less than one half the value of all the stock in the State.

The annual interest on this sum at one and one fourth per cent a month would be two million forty-two thousand and twenty-three dollars. The annual expense for repairs of fences, and the natural depreciation beyond the possibility of repair, can hardly be less in this destructive climate than twenty per cent of the original cost, a sum equal to two million nine hundred and eighty-nine thousand three hundred and sixty-five dollars, which, added to the interest account, gives us five million thirty-one thousand three hundred and eighty-eight dollars, the annual expense of keeping up the fences of the State. This is now a tax and incumbrance on our agricultural industries and energies. If levied exclusively on the stock raising interest it would amount to an annual tax of over one sixth, or nearly seventeen per cent of its present value, and would work an immediate ruin of the business itself. Deducted exclusively from the annual products of the other agricultural industries, as under the present rule it really is, it forces upon them an annual loss of about eight and one half per cent, and is truly a serious burden for them to bear.

SCARCITY OF TIMBER.

It is not improper, in this connection, to consider for a moment the scarcity of lumber in this State. Indeed, this scarcity and the cost of lumber for the building of fences may be instanced as one of the

strongest arguments in favor of a change of law and custom on this subject. It is now but about twenty-two years since the consumption of timber and lumber commenced in California, and according to a careful estimate of those best acquainted with the subject at least one third of all accessible timber of value then growing in the State is already consumed or destroyed.

We have but just commenced the great work of internal improvements, such as the building railroads, bridges, warehouses, wharves, factories, bulkheads, timbering mines, etc., and in the twenty-two years to come we shall require for such purposes ten times as much timber as we have used in that period of the past. If the scarcity and cost of fencing material is already among the greatest drawbacks or discouraging circumstances to the agricultural advancement of our State, without a change in this respect we may well feel a degree of solicitude for our agricultural interest ten years hence. To dispense with the necessity of the use of lumber is equivalent to its production. We hope, therefore, the subject of the fence laws will receive the impassionate and careful consideration at the hands of the Legislature that its importance at this time demands.

FOREST CULTURE.

No more important subject can engage the attention of a California Legislature than the encouragement of tree and artificial forest culture. The most wisely managed and most enterprising and prosperous countries of Europe long since saw the importance and necessity of planting and cultivating forests, and England and Scotland can boast of their thousands of acres of majestic pines, beeches, and oaks, at home, and their extensive forests of valuable timbers in their provinces abroad. Germany has large groves of our valuable California redwood growing in Government forests, in connection with other groves of valuable timbers collected from all portions of the world, and these forests are the pride as they are monuments of the wisdom of the nation. Germany has a special Bureau of the Government, devoted to the cultivation of the science and practice of artificial forest culture, and the preservation and protection of the natural forests. France, Austria, and Russia, even at an early day, gave to forest culture the countenance and encouragement of the Governments, and now the artificial forests of those countries are classed among the most valuable and highly prized Government property. California naturally was but a poorly timbered country, and the limited natural forests within her borders have been most recklessly and uselessly destroyed. While it is one of the first duties of the State to check this reckless destruction of the natural forests, it is a matter of no less importance to encourage and foster the growth and cultivation of artificial forests.

HARD TIMBER.

The scarcity of hard wood timber in this State, fit for the manufacture of wagons, carriages, and agricultural machinery generally, has operated to retard these particular branches of mechanical industry, and has at the same time been a serious tax on the farmers who have been under the necessity of using such machinery. From the fact that so few valuable varieties of hard timber were found growing here, naturally the impression generally prevailed that the climate of the State was not adapted to the production of such timber; that even though the most

valuable kinds should be planted and cultivated here artificially, the timber thus grown in our climate would be brash and brittle, and would be of a poor quality generally, like that of the native production. Recent experiments, brought about by the efforts of the State Agricultural Society and the offering by them of small premiums in a judicious way, have most effectually proven these impressions not well founded. It has been shown by positive experimental proof that the best Eastern varieties of hard wood timber, particularly the black and yellow locust, the black walnut, the wild black cherry, the osage orange, the rock and hickory elms, the various kinds of hard wood mulberry, the butternut, the chestnut, and the hard maple, and many other good varieties can be grown here much more rapidly than in their native forests of the Eastern and Western Atlantic States. Not only this, but the timber of many of these kinds of trees grown here has been thoroughly and practically tested by competent mechanics, and found to be equal in all the qualities of durability, elasticity, and strength to the timber of the same varieties grown East. We have also imported and grown successfully some of the most valuable varieties of hard wood trees from Australia, and the timber produced from these is also found to be equal to that grown in its native country. The facts thus obtained by a small outlay are very valuable and suggestive, and, in our opinion, warrant a special appropriation by the Legislature of a liberal sum of money, to be judiciously expended through the medium and under the direction of this society or its officers for the encouragement of artificial forest culture.

AGRICULTURAL AND MECHANIC ARTS COLLEGE.

In eighteen hundred and sixty-two Congress donated to each of the States and Territories which may provide Colleges of Agriculture and the Mechanic Arts one hundred and fifty thousand acres of land.

In eighteen hundred and sixty-eight the Legislature of California, in order to reap the benefits of such donation, created and established a State University, and provided that such University should consist of the following Colleges of Arts:

First—A State College of Agriculture, a State College of Mechanic Arts, a State College of Mines, a State College of Civil Engineering, and such other Colleges of Arts as the Board of Regents may be able and find it expedient to establish.

Second—A State College of Letters.

Third—A College of Medicine, Law, and other like professional Colleges.

In the Act creating this University the Legislature provided expressly that the College of Agriculture shall be first established, and as soon as practicable a moderate system of manual labor shall be established in connection with the Agricultural College and upon its agricultural or ornamental grounds, having for its object practical education in agriculture, etc., and to afford the students an opportunity of defraying a portion of the expenses of their education; that the College of Mechanic Arts shall next be established, and the Regents shall always bear in mind that the College of Agriculture and the College of Mechanic Arts are an especial object of their care and superintendence, and that they shall be considered and treated as entitled primarily to the use of the funds donated for their establishment and maintenance by the said Act of Congress. From the reading of the Act of Congress donating the land to the State and the Act of our own Legislature in the establish-

ment of the University, there can be but one opinion as to the intention of the National and State Legislatures. That intention is definite and unmistakable that the donation by Congress was for the sole and specific purpose of founding a college in each State for the benefit of those engaged in practical agriculture and mechanic arts. It was donated with a view of elevating the industrial classes, of creating among them a taste for scientific research and practical and technical knowledge, and thus indirectly of developing and utilizing the vast resources of the country.

In the Atlantic States this endowment has been and is being administered in a way to secure these benefits to the classes and objects intended. In Massachusetts, for instance, the Agricultural College is organized so as to secure upon its Board of Management one Trustee from each county in the State, and each county has as a Trustee of the college its best representative of its leading industries. There is three hundred and eighty-three acres of the real estate belonging to the college already divided up into farming ground, orchards, vineyards, woodland for artificial forest culture, vegetable and nursery gardens, botanical garden, ornamental grounds, and arboretum. A labor corps of students is established, and all the students are required to labor two hours on each alternate day in some department of the labor on the farm, under the direction and instruction of a skillful and intelligent Superintendent. For all extra labor the students are allowed twelve and a half cents an hour, and it is found in practice that the best students are most frequently the most industrious laborers and receive the greatest pecuniary aid therefor, as well as the formation of habits of industry and economy and good robust constitutions. The farm is well stocked with the best breeds of cattle, sheep, swine, and horses, and no department of agricultural industry is neglected.

The Cornell University of New York, also established to secure the benefits of the national donation to its citizens, is likewise a model institution, and is founded upon the same principles as that of Massachusetts—the primary benefit of the industrial classes and the higher development of the material industries. The students are also required to perform moderate labor here, and are allowed ten cents an hour for the same. The President of the institution reports here also the best laborers among the best students of the University. A large amount of labor, such as under-draining, special and experimental fertilizing, has been done on the farm of the college, and nearly all by the students, who are thus receiving practical lessons in agriculture and farming, in habits of thrift and economy.

California, above all other States, needs and could be most benefited by a practical School of Agriculture, of Mines and Mechanic Arts. Her undeveloped resources, and the new and peculiar conditions of these resources, demand practical, skillful, and intelligent management for their development. The peculiar location and climate of our country require extensive irrigation and reclamation systems, to inaugurate and accomplish which demands the highest science and engineering ability. Indeed, the field for experiment in agriculture, for genius in the direction and development of the mechanic arts and mining and civil engineering, is unlimited, and the future prosperity of the State is, to a great extent, involved in the good or bad management of these great physical questions.

How important, then, that all the means in our hands or at our command for the education of our youth in the practical arts and sciences,

in agriculture and the mechanic arts, should be rigidly and judiciously applied in that direction. How important that the expressed will and intent of the National and State Legislatures in the establishment of a college for the benefit of these industries should be faithfully and effectually executed.

Indeed, those interested in these industries and in the development of our material resources have a right to and should demand of the State such an execution of the trust donated to her for their special benefit.

But what is the real condition of our Agricultural College to-day? We have a University, and as one of the colleges composing that University there is a College of Letters, or Classical College, in all respects tolerably and in many respects admirably equipped—good enough for Yale or Harvard.

For an Agricultural College, which by law was to be first established and to receive primarily the benefit of the donation, we have a Professor of Agriculture—but transferred to and engaged in the chemical department.

For a farm we have at Oakland a highly ornamental park, which is a delightful resort for the residents of the neighborhood, and a favorite drive for the citizens of Oakland and vicinity. The ornamentation is of such a character that no use can ever be made of this ground for experiments in agriculture or horticulture, and indeed it is not designed that there ever shall be.

At Berkeley we have a most excellent piece of land, upon which has been expended this year in laying it out and in general ornamentation the sum of nearly nine thousand dollars; but not one dollar to prepare it for agricultural or horticultural purposes, and if it is ever to be used for these purposes most of the work that has been done will have to be undone. It is understood that the Regents put the time of occupation of the lands at Berkeley for agricultural purposes to a period of eight or ten years hence. The agricultural Professor has not yet been permitted to plant a tree or make one single experiment on the grounds of the University, either in agriculture or horticulture.

For an Agricultural College building we have the basement story of a building called the Agricultural College, but really designed in the far future for a chemical and metallurgical department. Thus it will be seen that while we have accepted the grant of Congress and nominally established an Agricultural and Mechanic Arts College, we have really nothing to show for them in a practical way. All that we have to show for the congressional donation and the large appropriations from the State School Fund, the Seminary Fund, and the Public Building Fund, is a Classical College where students designed for the learned professions are educated free, or rather at the expense of the donation and funds intended to be devoted exclusively for the benefit of the farmers and mechanics, and indirectly for the development of the material resources of the State. A classical education will never make a farmer or a mechanic; and we think the industrial classes have just cause for complaint at the manner in which the trust designed for their especial benefit is being administered. In looking over the list of twenty-two Regents who have had the management of the affairs of the University since its organization, or for the past four years, we find that twelve are residents of San Francisco, and eight of Oakland or its immediate vicinity, and that but one of the whole number is a practical agriculturist, and one a practical mechanic.

Having called attention to some of the facts and features connected with the Agricultural College about which we think the agriculturists and mechanics have a right to complain, we commend the whole subject to the good judgment of the Legislature.

IRRIGATION AND RECLAMATION.

The season of eighteen hundred and seventy-one was a season well calculated to call general attention to the benefits and prove the necessity of the adoption of some general plan of irrigation throughout each of the large open valleys of the State. The year eighteen hundred and seventy-two is ushered in under circumstances equally as well calculated to call general attention to the benefi s and prove the necessities of some general plan of reclamation from ruinous overflow of a very large portion of these same valleys.

An experience of twenty years, during which time the State and individuals have squandered beyond redemption in efforts at special reclamation millions of money, and the floods have swept away millions of property and caused an incalculable amount of suffering and the loss of many lives, has pretty effectually proved the utter uselessness of any effort to reclaim any considerable portion of the swamp and overflowed lands of the interior of the State on any plan or system that shall not embrace within its scope all of this class of lands bordering on the Sacramento and San Joaquin Rivers and their tributaries, including the islands about their confluence.

The same experience has proved the utter impracticability of any plan or system for such reclamation that shall not contemplate additional channels to conduct the water through the great valleys which are by nature necessarily the receptacles of the vast quantities of water that fall on the great extent of rapidly sloping watersheds that so closely surround them, as well as additional outlets into the bays or tide water at points some distance from the one at which all these waters are now by the natural channels concentrated and, as it were, heaped up together. These propositions suggest the propriety and importance of considering a joint plan of reclamation and irrigation that shall embrace in mutual interests and mutual benefit, and consequently mutual duties and joint expense, the entire portion of the State lying between the Coast Range and Sierra Nevada Mountains, and north and east of the Bay of San Francisco. This district of country embraces an area of not less than five million acres of land—the largest portion of which, owing to the droughts and floods to which it is so frequently subject, is not sufficiently reliable as an agricultural country to support above the contingencies of occasional loss and suffering any very large amount of population, but which, securely reclaimed from destructive overflows, and supplied with the facilities of necessary irrigation, can be made to support more easily and in a condition of greater permanent prosperity than the present inhabitants enjoy, one person to every acre of land within its limits, or five million of people.

The longer the adoption of some plan for general irrigation and general reclamation is delayed, the greater the difficulties in which the subject will be involved. Local plans and special systems will engage the attention and enlist the energies and means of the people, conflicting rights and vexatious questions of water privileges will grow up to

involve them in unfriendly contention and fruitless litigation, and the whole country will suffer for the want of a system of general wholesome laws that shall secure equal privileges and equal rights to all. The Legislature cannot too soon address itself to the earnest consideration of this subject.

REAL ESTATE AND PERMANENT IMPROVEMENTS.

Since the last Report the Board have, in pursuance of the authority vested in them by the original charter of the society, purchased a very valuable piece of real estate. Five blocks of the northern half of the inclosed grounds occupied by the society as stock grounds and race course, have heretofore belonged to an association known as Union Park Association. The property was purchased by the association for the sum of seven thousand two hundred dollars, and the society was allowed to use it free of charge during its annual Fairs; but the rent of the ground and all its benefits, except during the Fairs, belonged to the association. The Board has purchased sixty-six of the seventy-two shares of this property, together with all its improvements, at its original cost, and intend as soon as practicable to purchase the six remaining shares, which it is understood can be had at the same rate.

The south half of the Union Park ground, now all in possession of the society, is owned by an association known as Agricultural Park Association, but the society hold a perpetual lease of this half, the only condition being that the society shall hold an Agricultural and Stock Fair annually on the same, and in default of such Fair the lease is abrogated and the land reverts to the original owners. So that it will be seen that the society is owner in fee of the north half of the grounds, and so long as it keeps up the annual Fairs is virtually so of the south half. The value of this property, with improvements, is, at a low estimate, from thirty-five thousand dollars to forty thousand dollars. Within the last two years the Board has expended some twelve thousand dollars in permanent improvements upon these grounds, and within the next two years it will become necessary to make still greater and more costly improvements. The main stand for the accommodation of the people at the trials of speed, the examination and grand parades of stock, requires to be taken down and replaced with one of at least double the present capacity. The necessary expense of such improvement is estimated at not less than fifteen thousand dollars.

Improvements have also been made at the Pavilion. The County of Sacramento, with her accustomed liberality toward the society, has borne a share of these improvements. The capacity of the halls for exhibition purposes have within the last two years, by such improvements, been doubled, and yet at the last Fair it became necessary to obtain the use of additional ground, and still all the lumber wagons and heavy agricultural machinery had to be exhibited in the open air.

It will thus be seen that with the increased usefulness of the society heavy additional outlays are becoming necessary. As these outlays are for the direct benefit of the material industries of the State and for the accommodation of that class of citizens who contribute most to the improvement of these industries, we feel warranted in asking of the Legislature a liberal appropriation to aid the society in meeting them.

LIBRARY.

One of the great necessities of the agricultural interests of the State is a general diffusion of agricultural knowledge among our farming communities. It is to be regretted that we have not on this coast a public agricultural library, embracing to any extent the many valuable agricultural works now extant and to be found in the libraries of the best managed and most useful eastern Agricultural Societies. The State at great expense has purchased, and by large annual outlays maintains a library at the State Capitol, mainly devoted to the subjects of legal jurisprudence and general legal literature, especially for the benefit of the non-producing classes; but this library is of no practical benefit to the industrial classes, nor is it designed or intended to benefit them or to aid in the development of the agricultural or other material industries of the State.

To secure the general welfare and increase the skill, effectiveness, and practical intelligence of the producing classes, should be among the first objects of an enlightened, popular Government; and in no other way can these objects be so economically and surely secured as by placing within the reach of these classes public libraries well filled with works treating in a practical manner of the several industries in which they are engaged. The State Agricultural Society is the proper custodian of such library, and but for the want of means the Board would long since have provided it. The great need of such library is the daily experience of the officers of the society, as a convenience for reference in answering inquiries constantly coming from the industrial classes. The State should no longer neglect to supply this want, and thus in this respect place the producing classes upon an equal footing with its professional and non-producing citizens. We commend this subject to the attention of the Legislature, hoping it will be pressed more particularly by the representatives of the rural districts, feeling confident that its justice will secure it against any opposition from any quarter.

FINANCES OF THE SOCIETY.

Unexpended appropriations in 1869	$2,883 00	
Balance brought from account 1869	61 84	
Receipts for 1870	33,932 30	
Receipts for 1871	44,797 77	
Cash assets for two years		$81,674 91
Contra.		
Incidental expenses and Premiums for 1870	$28,428 68	
Permanent improvements	6,000 00	
Paid for real estate	5,600 00	
Incidental expenses and Premiums for 1871	33,541 83	
Permanent improvements	6,500 00	
Paid for real estate	1,000 00	
Total expenses for two years		81,070 51
Balance in treasury January 1st, 1872		$604 40

CHAS. F. REED,
President.

I. N. HOAG,
Corresponding Secretary.

COMPILATION OF LAWS

RELATING TO THE

STATE AGRICULTURAL SOCIETY.

A COMPILATION

OF ALL THE LAWS NOW IN FORCE RELATING TO OR AFFECTING THE STATE AGRICULTURAL SOCIETY.

AN ACT

TO INCORPORATE A STATE AGRICULTURAL SOCIETY AND APPROPRIATE MONEY FOR ITS SUPPORT.

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. There is hereby established and incorporated a society to be known and designated by the name and style of the "CALIFORNIA STATE AGRICULTURAL SOCIETY," and by that name and style shall have perpetual succession, and shall have power to contract and be contracted with, to sue and be sued, and shall have authority to have and use a common seal, to make, ordain and establish, and put in execution such by-laws, ordinances, rules, and regulations as shall be necessary for the good government of said society, and the prudent and efficient management of its affairs; *provided*, that said laws, ordinances, rules, and regulations shall not be contrary to any provision of this charter, nor the laws and Constitution of this State or of the United States.

SEC. 2. In addition to the powers above enumerated, the society shall, by its name aforesaid, have power to purchase and hold any quantity of land not exceeding four sections, and may sell and dispose of the same at pleasure. The said real estate shall be held by said society for the sole purpose of establishing a model experimental farm or farms, erecting inclosures, buildings, and other improvements calculated and designed for the meeting of the society, and for an exhibition of the various breeds of horses, cattle, mules, and other stock, and of agricultural, mechanical and domestic manufactures and productions, and for no other purposes.

And be it further enacted, That if, from any cause, said society shall ever be dissolved, or fail to meet within the period of two consecutive years, then the real estate held by it, together with all the buildings and appur-

tenances belonging to said estate, shall be sold as lands are now sold by execution, and the proceeds deposited in the State Treasury, subject to the control of the Legislature.

AN ACT

SUPPLEMENTAL TO AN ACT TO INCORPORATE A STATE AGRICULTURAL SOCIETY, APPROVED MAY THIRTEENTH, EIGHTEEN HUNDRED AND FIFTY-FOUR, AND AMENDED MARCH TWENTIETH, EIGHTEEN HUNDRED AND FIFTY-EIGHT.

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. The general prudential and financial affairs of the society shall be intrusted to a Board of Agriculture, to consist of a President and nine directors, five of whom shall constitute a quorum.

[Amended section.]

SEC. 2. Said Board of Agriculture shall be elected at a general State Agricultural Convention, to be held at the Capital of the State, in the year one thousand eight hundred and sixty-three, in the month of March, and in the month of January every year thereafter, to consist of the life members and annual members of the State Agricultural Society and four delegates from each County Agricultural Society within this State incorporated under the general laws of this State for such corporations, and an equal number from each District Agricultural Society also incorporated under the general laws of this State for such purposes; said delegates to be chosen at the annual Fair or annual meeting of each such society next preceding the State Agricultural Convention; *provided*, said Convention to be held in March, in the year one thousand eight hundred and sixty-three, may admit any person or persons representing any of said County or District Agricultural Societies, as the Convention may determine by a majority vote, whether such persons shall have been elected by their respective County or District Societies, as provided in this Act, or not.

SEC. 3. The Board of Agriculture shall, at its first meeting after its election, be divided by lot into three equal portions (omitting the President), one portion to continue in office one year, one portion two years, and one portion three years; one third of the number, together with the President, to be elected at the State Agricultural Convention annually thereafter; the Directors to hold office three years.

SEC. 4. The Board of Agriculture may, in the absence of the President, choose one of its other members temporary Chairman. They shall elect a Treasurer and Secretary, not members of the Board, prescribe their duties, fix their pay; and the said Treasurer and Secretary shall be subject to removal at any time by a majority of said Board.

SEC. 5. The Board of Agriculture shall use all suitable means to collect and diffuse all classes of information calculated to aid in the development of the agricultural, stock raising, mineral, mechanical, and manufacturing resources of the State; shall hold an annual exhibition of the

industry and products of the State; and, on or before the first day of January of each year in which the Legislature shall be in regular session, they shall furnish to the Governor a full and detailed account of all its transactions, including all the facts elicited, statistics collected, and information gained on the subject for which it exists; and also a distinct financial account of all funds received, from whatever source, and of every expenditure, for whatever purpose, together with such suggestions as experience and good policy shall dictate for the advancement of the best interests of the State; the said reports to be treated as other State documents are.

Sec. 6. The Board of Agriculture shall have power to appoint a suitable number of persons to act as Marshals, who shall be from twelve o'clock, noon, of the day previous to the opening of the exhibition until noon of the day after the close of the same, vested with all the powers and prerogatives with which Constables are invested, so far as acts or offenses committed within or with reference to or in connection with the exhibition are concerned.

Sec. 7. The Board of Agriculture may, in its discretion, award premiums for the best cultivated farms, orchards, vineyards, gardens, etc.; *provided*, that said Board shall not audit, allow, or pay an amount exceeding one thousand dollars in any one year for traveling expenses of Visiting Committees in examining said farms, et cetera; *provided* further, that no person except practical agriculturists shall be appointed on said committees.

Sec. 8. It shall be optional with any to whom a premium is awarded to receive the article named or its equivalent (as affixed) in coin.

Sec. 9. The State Agricultural Society shall have power at its first annual meeting after the passage of this Act to make such alterations in its constitution as shall make it conform to the provisions of this Act.

Sec. 10. All Acts or provisions in conflict with the provisions of this Act are hereby repealed.

Sec. 11. This Act shall take effect from and after its passage.

CONSTITUTION

OF THE

STATE AGRICULTURAL SOCIETY.

CONSTITUTION

OF THE

CALIFORNIA STATE AGRICULTURAL SOCIETY.

ARTICLE I.—NAME.

SECTION 1. This society shall be called "The California State Agricultural Society."

ARTICLE II.—OBJECT.

SECTION 1. It shall be the object of this society to encourage the cultivation of the soil and the general development of all the agricultural resources of this State.

SEC. 2. To foster every branch of mechanical and household arts calculated to increase the happiness of home life.

SEC. 3. To extend and facilitate the various branches of mining and mining interest.

ARTICLE III.—MEMBERSHIP.

SECTION 1. *Annual Members.*—Any person who has during the year eighteen hundred and sixty-five, or who shall during this year or any subsequent one, pay into the funds of this society the sum of five dollars, may become a member of the same; such membership to expire on the thirty-first day of the following December.

SEC. 2. *Life Members.*—Any person may become a member for life by the payment of fifty dollars; or, if already a member, by the payment of forty dollars, and shall thereafter be exempt from all dues and assessments.

SEC. 3. *Honorary and Corresponding Members.*—Any person whom the Board shall propose may be elected an honorary or a corresponding member, and shall enjoy, free of charge, all the privileges of the society, except voting and holding office.

SEC. 4. *Privileges of Members.*—Any citizen of this State, being a member of this society, shall be eligible to office, entitled to vote, and

enjoy the free use of the library, under the rules of the same, and have free admission, accompanied by his wife and minor children, to all the exhibitions of the society, and shall be permitted to compete for premiums in any or all departments.

SEC. 5. *Expulsion of Members.*—Any member who shall present for exhibition any article or animal which he is not entitled by the rules of the society to exhibit, or who shall attempt to deceive, or be guilty of a breach of good faith toward the society, may be expelled by a vote of two thirds of the members present at any meeting of the society; *provided*, always, that no member shall be expelled unless written notice of the alleged offense shall have been served on him, or left at his usual place of residence at least twenty days previous to the action.

ARTICLE IV.—OFFICERS.

SECTION 1. The officers of this society shall consist of a President and nine Directors, who shall constitute a State Board of Agriculture, five of whom shall constitute a quorum. They shall elect a Treasurer and Secretary, not members of the Board. They may also appoint annually, as officers of the Board, a chemist, a botanist, a meteorologist, a geologist, a metallurgist, an ornithologist, and an entomologist, and define the duties of each. They may appoint such committees on the various departments of agriculture, mining, and manufactures, either generally or for specific purposes, as they may deem important for the best interests of the State, and require such committees to report the results of their investigations to the Board at such times as may be named by them.

SEC. 2. *Duties of President.*—The President shall preside at all meetings of the Board, and of the society; shall have power to call special meetings of the Board when necessary, and at the written request of ten members may call extra meetings of the society; shall appoint all meetings not otherwise provided for; shall vote only at the election of officers, and in case of a tie; and shall sign all financial and official documents emanating from the society not otherwise provided for. In the absence of the President from any meeting of the Board or society, any Director may be called to the chair, and during such meeting, and for the completion of any business transacted or ordered at the same, shall have the same powers as the President.

SEC. 3. *Duties of Secretary.*—The Secretary shall conduct the correspondence of the society, keeping in a separate book copies of all letters written in the name or on behalf of the society, holding the same free to the inspection of any member of the society, at any regular meeting of the same. He shall also receive and file all letters addressed to the society, holding the same subject to the Board of Directors. He shall attend all meetings of the society and the Board, keeping a full record of the doings of each in a separate book, and shall furnish a copy of the proceedings of each meeting to the Committee on Publication within five days after the close of such meeting. He shall prepare and publish all notices of meetings, shall keep a roll of all Standing Committees, and call the same (noticing absences) whenever desired to do so by the Chair; shall sign all certificates of honorary and corresponding memberships, and forward the same to those entitled to receive them. He shall keep, in a book prepared for that especial purpose, the name and address of every member; shall prepare and sign all gratuitous or complimentary cards or tickets of admission; shall countersign all diplomas, certificates of merit,

etc., awarded by the society, and forward the same to their respective claimants. He shall be ex officio Librarian; shall keep the seal, and all the plates, dies, engravings, etc., belonging to the society, and shall cause to be struck therefrom such medals and impressions as may from time to time be required. He shall have charge of all specimens, models, plants, seeds, books, etc., and arrange, prepare, or distribute the same under the direction of the Board. He shall prepare all reports to be made by the Board to the Society, and all reports to be made by the Society to the State. He shall receive all moneys due or payable to the Society, and pay the same to the Treasurer, taking his receipt therefor; shall hold all bonds filed by officers of the Society for the faithful performance of their duty, and all vouchers for every class of expenditure. He shall countersign all drafts ordered by the Board, and all certificates of annual and life membership, and keep an account of the same, in a separate book, as they are issued, and shall, in December of each year, prepare a tabular statement of the receipts and expenditures of the Society, according to the law incorporating the same. For which services he shall receive such compensation as the Board shall decide to pay.

Sec. 4. *Duties of the Treasurer.*—The Treasurer shall receipt for all funds at the hands of the Secretary, and shall disburse the same only on the order of the Board, attested by the President and the Secretary. He shall also hold in trust all certificates of stock, bonds, notes, deeds, or other evidences of debt or possession belonging to the Society, and shall transfer, invest, or dispose of the same only by direction of the Society, or by a written order of the Board. He shall, within ten days after his election, file with the Secretary a bond for the faithful performance of his duties; said bond to be approved by the Board and to be in a sum equal to twice the combined amounts of the funds on hand and the estimated revenue for the year; and shall, at the annual meeting, make to the Society a detailed report of all his doings; for which services he shall receive such compensation as the Board shall from time to time decide to pay.

Sec. 5. *Duties of the Board.*—The Board of Managers shall have the general and financial management of all the affairs of the society in the interim of annual meetings. It shall fill all vacancies occurring between elections, and shall make the necessary preparations and arrangements for all meetings, fairs, exhibitions, etc. The Board shall also have power to make its own by-laws (not inconsistent with this Constitution) and arrange the time and place of its own meeting.

ARTICLE V.—STANDING COMMITTEES.

Section 1. *Committee of Finance.*—The Committee of Finance shall consist of three (the President and Secretary being two), whose duty it shall be to audit the Treasurer's account, to examine and approve all bills before they are paid, to have a general supervision of the finances of the society, and to report their doings in full to the Board whenever called on so to do.

Sec. 2. *Library Committee.*—The Library Committee shall consist of three (the Secretary being one), whose duty it shall be to have the general supervision of the library and cabinet, to make all necessary rules and regulations for the government of the same (said rules and regulations being subject to the approval of the Board), to suggest such means for the safe keeping and enlargement of both the library and cabinet as they may deem expedient, and to make a full report of their doings,

together with the state of the department under their charge, at each annual meeting.

SEC. 3. *Visiting Committee.*—The Visiting Committee shall consist of three, whose duty it shall be to visit and examine all farms, orchards, vineyards, nurseries, field crops, mining claims, ditches, mills, etc., which may be entered for competition, and which shall require examination at other times and places than the annual Fair; to award premiums for the same, according to the schedule, and recommend such gratuities as they may deem proper, and make a full report to the Board at least one day previous to the annual meeting.

SEC. 4. *Committee of Publication.*—The Committee of Publication shall consist of three (the President and Secretary being two), whose duty it shall be to contract for and superintend, under the direction of the Board, all printing and publishing necessary for the prosperity of the society.

ARTICLE VI.—DONATIONS AND BEQUESTS.

SECTION 1. All donations, bequests, and legacies to this society, designated by the donors for any particular purpose embraced within the objects of the society, shall be with strict fidelity so applied; and the name of each donor, together with the amount and description of such donation, and the object for which it was designated, shall be registered in a book kept expressly for that purpose.

ARTICLE VII.—MEETINGS AND EXHIBITIONS.

SECTION 1. *Exhibitions.*—The society shall hold an annual Fair and Cattle Show in the City of Sacramento, and may at its discretion hold such other exhibitions as it may deem conducive to the interests of agriculture.

SEC. 2. *Annual Meeting.*—The annual meeting shall be held at the Capital of the State at such time during the month of January in each year as the Board may designate, at which time all the officers from whom reports of the preceding year's service are required shall present the same, and all officers for the ensuing year shall be elected by ballot; and all officers shall continue in office until their successors are duly qualified.

SEC. 3. *Special Meetings, how called.*—No special meeting of the society shall be called but upon thirty days notice in the columns of a newspaper published in each of the Cities of San Francisco, Sacramento, Marysville, and Stockton; nor without a request signed by at least ten members.

SEC. 4. *Proxy Voting.*—It shall not be admissible for any member to vote by proxy in any meeting of this society, or its Board of Managers.

SEC. 5. *Quorum of the Society.*—At any meeting of this society fifteen members (a majority of whom shall represent counties other than the one where the meeting shall be held) shall constitute a quorum.

ARTICLE IX.—OFFICE AND ROOMS.

SECTION 1. The office, rooms, library, and cabinet of the society shall be permanently located at the Capital of the State.

ARTICLE X.—AMENDMENTS.

Section 1. Amendments to this Constitution must be presented in writing at an annual meeting, when, if unanimously agreed to, they shall be adopted; but if there be objection, and a majority consent thereto, they shall be spread upon the minutes and lie over until the next annual meeting, when they shall be read, and if after due discussion two thirds of all the members present vote for the amendments, they shall be adopted and become a part and parcel of this Constitution.

ARTICLE XI.—EFFECT.

Section 1. This Constitution shall take effect from and after its passage.

I certify the foregoing to be a true copy of the Constitution of the California State Agricultural Society, as amended by unanimous consent at the annual meeting of the society, held on the twenty-eighth day of January, A. D. eighteen hundred and sixty-nine.

I. N. HOAG, Corresponding Secretary.

TRANSACTIONS

OF THE

STATE AGRICULTURAL SOCIETY

FOR

THE YEAR 1870.

STATE BOARD OF AGRICULTURE FOR 1870.

PRESIDENT.

CHARLES F. REED.....Grafton, Yolo County.

DIRECTORS.

H. M. LARUE.....Sacramento.
H. R. COVEY.....San Francisco.
R. S. CAREY.....Yolo.
C. T. WHEELER.....Sacramento.
EDGAR MILLS.....Sacramento.
ROBERT HAMILTON.....Sacramento.
WILLIAM BLANDING.....San Francisco.
E. J. LEWIS.....Tehama.
WILLIAM P. COLEMAN.....Sacramento.

OFFICERS OF THE BOARD.

Secretary.....ROBERT BECK, Sacramento.
Treasurer.....R. T. BROWN, Sacramento.

REPORT

OF THE

STATE BOARD OF AGRICULTURE FOR 1870.

To the Members of the State Agricultural Society:

Gentlemen: In presenting to you our annual report at this time we feel no little pride and satisfaction in being able to say that the State Agricultural Society, the management of which has been entrusted to our care, was never in a more prosperous condition, financially and otherwise, than at present.

A comprehensive statement of the transactions of the Board for the past year, the present position and wants of the society, together with some recommendations for changes, with a view to rendering the society more efficient in assisting in the development of the State's numerous agricultural and other resources will be found at the close of this report.

In reviewing the progress and results of the industries of the State for the past year the Board find abundant reason for indulging in most sincere thankfulness to Providence for the general prosperity that has been vouchsafed to our entire people. In looking over the industrial prospects of the future we also find abundant reason for entertaining most sanguine hopes for an uninterrupted continuance of a healthy and substantial progress in all the arts, sciences, and industries that contribute to the general prosperity and happiness of a people.

The long continued dry weather during the past few months was beginning to cause serious apprehensions among all classes of the community that we were about to experience a repetition of the disastrous consequences of a dry season like that of eighteen hundred and sixty-three and eighteen hundred and sixty-four. The late rains, however, and the general change of the weather gives promise that the ensuing year will be one of the most prosperous that the State has ever experienced.

In pursuance of a better and more rational system of agriculture which our grain farmers have been adopting for the last few years, an

unusually large breadth of land was Summer fallowed during the last Spring. The weather for farm labor the fore part of the present sowing season being so favorable, all the land thus prepared has been put in early and in a most excellent condition. There has been sufficient rain to keep the work of planting going on continuously in most portions of the State, and it is believed that as a general thing land has been in a better condition for working and planting than in seasons when we have experienced a greater abundance of wet during the planting time. If we have the amount of rain fall between this and Spring which we may now reasonably expect, we may look forward for one of the most abundant grain harvests we have ever experienced in the State. The prospects of an unusually large foreign demand for our surplus grain were never better than at present. The supply of wheat on hand at the present time at Liverpool, New York, Chicago, and Milwaukee, the great centers of concentration of the breadstuffs of the world, is reported to be four million seven hundred and seventy-eight thousand bushels less than it was one year ago. The war in France and Germany, if continued until after the time for planting in those countries is past, must cause a very great falling off in the production of breadstuffs there the coming season, while the excess of consumption and destruction by the armies over the ordinary consumption of those countries in time of peace must necessarily be very great. The present indications are that Germany and France will not only fail to produce a surplus the coming season, but that they will themselves be heavy buyers for their own consumption.

SILK CULTURE.

As a consequence of the war between France and Germany, this promising industry just in its infancy in our State, has met with a very unexpected and much to be regretted loss. Our silk culturists, encouraged by previous large and apparently constant demand for California silk eggs for European countries, turned their product for the past season mostly into that article. Orders were received from Paris last Spring for large quantities of eggs, and the prospect for good profits to producers looked very flattering. When the war commenced, however, the orders that had been received were countermanded and no others sent out. Great injury to all the industries of France, and especially to those connected with silk culture and manufacture, is the necessary result of the war, carried on as it has been entirely within the borders of that country. The sale of the California eggs has thus unexpectedly been cut off and the product of the past season rendered almost an entire loss. As the eggs will necessarily hatch in the hands of the producers, no consideration can be realized from them except for those necessary for home consumption. Through an anomalous combination of circumstances the immediate demand for cocoons has also been injured by the war. The silk manufacturing machinery of France, being nearly half that of the world, has heretofore been able to consume nearly all the silk produced in Europe, and has also required large importations from the silk districts of Asia. This machinery is in effect now most entirely idle. As a consequence the cocoons and raw silk produced the last season in many portions of France, in Italy, Spain, and other parts of Europe, and in China and Japan, are seeking a market elsewhere. The capital and machinery employed in silk manufacturing, outside of France, are insufficient to handle and consume the large amount of extra material thus offered. Thus, for the present, the market is overstocked with

cocoons and raw silk—a thing unknown in the history of this industry in the past, and not probable to occur again. All such anomalous conditions of commerce and trade, in articles of such universal consumption, are followed by changes which prevent a repetition of themselves in the future. Such changes are already taking place in reference to these industries.

Manufactured silk goods are rapidly increasing in value, and are likely to go very high. Capitalists in our own country are seeing the promise of certain and large profits, are seeking investment in silk factories. Heavy manufacturing houses in Lyons and other portions of France that have heretofore had only agencies in the United States for the sale of their goods, are preparing to transfer their entire establishments to this country. Thus the war in France has set the eyes of silk manufacturers towards the United States. The fifty per cent ad valorem duties which all manufactured silk goods imported to this country have to pay gives them a strong invitation and inducement to take advantage of it. The fact that raw silk and cocoons may be imported free of duty opens the door for the immediate supply of the raw materials, while the favorableness of the climate in many portions of our country—and especially in California—for the production of silk guaranties a plenty of that raw material close at hand for all future time.

If peace was to be concluded between Germany and France immediately, the silk crop of France for the next year would necessarily be very light if not a total failure. It will require years to repair the injuries already done to this industry, and in the presence of the disease of the worms which has prevailed there in the past, and most likely will in the future, it is not probable that the production will ever reach the maximum raised before the war. Thus the temporary loss to our silk culturists is accompanied with a promise of almost certain compensation in the immediate future of an hundred fold, and the industry in which they are engaged has received an impulse as unexpected as it is encouraging. By careful inquiry among our silk growers we learn that the disease among the worms in some localities, the past season, was entirely confined to those of French or European origin. The Japanese worms proved hardy and healthy in all cases, even when fed in the same buildings and close by the side of the French which were badly diseased. Though the first importations of Japanese eggs were of an inferior kind, making small cocoons, of late varieties have been obtained from the extreme north of Japan which are in no way inferior to the best French annuals in the quality or quantity of the silk produced, and are at the same time perfectly healthy and reliable.

There are more mulberry plantations being set out this season than at any planting season heretofore, and on the whole the industry is in a most promising condition. If our farmers generally would plant a few mulberry trees about their buildings and on the line of the highways and division fences they would answer the double purpose of ornamenting and beautifying their places and laying the foundation for the general introduction of a pleasant and valuable industry. Thus also an important step would be taken towards a more diversified and hence more agreeable and profitable agriculture.

BEET SUGAR.

In the report of the Board for the year eighteen hundred and sixty-four, and in every annual report since that time, the attention of our

people has been most earnestly called to the feasibility and importance of the production of the sugar beet in our State and the manufacture of sugar therefrom. So important have we deemed this subject that we have returned to and repeated our recommendations year after year, and have from time to time shown by carefully compiled statistics the amount of gold California was annually exporting in return for sugar imported.

Within the last seven years—and since we first called attention to this industry and demonstrated its practicability in California—we have paid for imported sugars and molasses over thirty-four millions of dollars. In the light of this fact we are able to place some estimate upon the importance of the successful initiation of this industry in our State during the past year upon a scale that leaves no doubt as to its entire success in every particular. We may now look forward with certainty to the time, and that not far distant, when we shall be able to produce all the sugar and molasses we shall need for home consumption, and we see no reason why we may not become exporters. Thus, by the addition of a single new industry we shall save for distribution among our own people, and mostly among the laboring class, five millions of dollars a year.

Other and still greater advantages may be looked for as a consequence of this new industry. It has been demonstrated that the manufacture of sugar from the beet contributes greatly to increase the other products of the soil. The extraction of the saccharine matter deprives the root of only a part of its elements. The pulp and foliage of the beet supplies for animals an abundance of food, and the returns of the sugar works will enable them to produce manures which will indefinitely increase the fertility of the soil. In a single province of France, where the product of wheat before the introduction of this industry was but nine hundred and sixty-one thousand one hundred and seventy-three bushels, and the number of cattle seven hundred, a few years after its introduction the wheat product had increased to one million one hundred and fifty-eight thousand two hundred and fifty-six bushels, and the number of cattle to one hundred and ten thousand five hundred.

In this connection we would suggest that experience in France, Germany, and other beet sugar countries, has proven that the best land for this purpose is that which will produce the best wheat or secretes the greatest amount of saccharine matter in the grape. Many sections of this State, where the land has been for many years subjected to an annual cropping of grain, and is for this crop nearly exhausted, are as well adapted to the production of the sugar beet as the richest alluvial bottoms. The beets on such lands will not grow so large, and the product of the root per acre will be less in tons; but the beets will be sweeter, and the number of pounds of sugar per acre will be greater.

We would also suggest the practicability and propriety of the organization of sugar companies among our farmers, and the manufacture of sugar on a scale suited to the means and facilities of the company. One hundred thousand, or fifty thousand, or twenty-five thousand dollars are not necessary to a successful beginning. On the contrary, small factories conducted on the coöperative plan and located in the immediate vicinity of those interested in them, are generally more economically managed and pay greater dividends on the capital invested. Farmers should not wait for capitalists to monopolize the profits of this industry. Good lands, the coöperation and intelligent direction of labor, with a small amount of ready money with which to put up buildings and purchase machinery are all the elements that are necessary for the successful and

profitable manufacture of sugar. The process of making sugar from beets is as easily learned by any farmer and may be as successfully practiced by him as the process of making cheese from milk.

DAIRY FARMING.

Dairy farming, carefully and properly conducted, has always been one of the most profitable of the agricultural industries of the United States, and in no State has it paid better than in California. Among our most prosperous and wealthy farmers are those who, in one way or another, have made a specialty of dairy farming. The people of no other State have paid so dearly for their milk, butter, and cheese as those of California. As prices have rated heretofore, it costs an ordinary family more to pay their milk, butter, and cheese bills than to pay for all the flour, potatoes, beans, onions, and other strictly home produced agricultural necessaries they consume; and yet we are safe in the assertion that there is not over one farmer in the State that makes a practice of producing butter or cheese for sale to one hundred almost exclusively engaged in raising wheat and barley for the markets. While we are large exporters of wheat and barley, we still import annually over one million dollars worth of butter and cheese. Such are the inconsistencies of the California system of agriculture. We would most earnestly recommend our farmers to keep more cows, hogs, and sheep on their farms and cultivate less acres to grain. We are satisfied that such a change in the practices of the agriculturists generally would result in greater pecuniary gains, and at the same time increase, rather than decrease, the fertility and productiveness of the soil.

A few acres well seeded to alfalfa or Chile clover will, in this country, afford a good living to almost an incredible number of stock. We have noticed almost universally increased evidences of thrift and prosperity surrounding those farmers who have already adopted this system over those who still adhere to the old plan of producing exclusively wheat and barley and buying everything else consumed on their place or in their families.

CALIFORNIA WINES AND GRAPES.

There has for a number of years past been a sensible change for the better in our native wines. This has been evident in the improvement from year to year of the samples exhibited at our County, District, and State Fairs. Another evidence of such improvement is found in the increased demand for our wines for general consumption and a corresponding decrease in the demand for those of foreign brands. This improved quality of our wines is the result not so much from any great improvement in the kind or quality of our grapes as in the system of making and handling the wines themselves. Our grape growers have learned by experience that some skill is required to make a good and uniform quality of wine, and that in the absence of this skill and the necessary means and facilities for keeping and handling the juice of the grape until such quality of wine is secured, it is less trouble and more profitable for them to sell their grapes to those who possess that skill and the required means and facilities. Wine making companies have been formed in many localities, and wine factories and cellars established, at which the grapes of the surrounding country are purchased, carefully assorted and classed,

and each class made into such wine as in the judgment of the operators they are best adapted. This system of wine making is one that we have been recommending in our reports and otherwise for years past, and we rejoice that it is being so generally adopted. It is the only system that can secure good and uniform brands of wine, and give them character and command for them a market at home or abroad. The evidences of prosperity manifested by such wine making companies are conclusive as to the satisfactory profits made on the capital invested in this manner. The prices paid for grapes—from twenty dollars to twenty-five dollars per ton—are very satisfactory to the growers. Well cultivated vineyards of the California grape are made to yield in this way a net annual income of from fifty dollars to one hundred dollars per acre. Good vineyards of choice table grapes yield much larger incomes. The Muscat of Alexandria have averaged for years as high as two hundred and seventy dollars net per acre; while the Black Hamburg, Black Malvoile, and Golden Chasselas have netted four hundred and fifty dollars, and the Alexandria Muscat has paid a profit of seven hundred and seventy-five dollars per acre.

We present these figures to our grain farmers, and ask them if it will not be better to plant vineyards on some portions of their lands that have been cropped with grain until the annual product scarcely pays the expense necessary to secure it. Such lands are still good for the vine, and in this way may be made in a few years to yield a handsome income to their owners.

While annual crops of grain exhaust and impoverish the soil, the vine recuperates and improves it. While grain requires planting yearly, grape vines once planted and in bearing will yield annual crops for a lifetime. There has never yet been in the State a failure of the grape crop from drought or any other cause. While we would encourage the grain farmers on the plains to plant vines, and thus diversify their crops, we do not forget that we have thousands of acres of most excellent vine land bordering the foothills, generally known as "red land," and a vast area in the foothills themselves, that for wine making and raisin culture cannot be excelled in the world. France and Germany have heretofore been our strongest opponents in the introduction of our wines into the markets of the world. While we regret the present devastating war between them as a great calamity, not only to themselves, but to mankind generally, we are not insensible of the advantages accruing to many of our industries as a result of that war. Among those industries already most favorably affected thereby are grape growing and wine making, and we hope our people will not be slow to make the most of the advantages thus accruing, nor in taking the necessary steps to render those advantages permanent and profitable. A late ruling of the Commissioner of Internal Revenue, to the effect that sparkling wines made from the native grapes, or from wines produced from such, are not subject to taxation, while all such wines made from foreign grown grapes or foreign wines is subject to taxation under the Internal Revenue laws, is most favorable to the wine interests of our State.

FRUIT CULTURE.

Fruit culture in California is becoming one of our most promising industries. For some years before the completion of the overland railroad and the consequent opening of the Eastern markets for our surplus fruits, those engaged extensively in raising fruit for sale found it difficult

to make the business satisfactorily remunerative. The fact that fruits in many portions of our State mature from three to four weeks earlier than the same kinds do in the Atlantic States, the acknowledged superiority of the California fruits over those of the East, and the improved facilities lately introduced for shipping fruits a great distance by rail, are affecting most favorably this industry in our State.

Again, our growers are learning by experience the varieties best adapted to the different localities and climates of our State, and to the markets upon which they depend for sales, and are grafting and budding and improving their orchards and fruit accordingly. They are also learning and adopting a better system of economy in management. Less fruit is now allowed to go to waste in the orchards than formerly. It is either dried or fed to stock or made into vinegar, and thus in one way or another made to swell the profits of the year's operations.

FRUITS IN THE MOUNTAINS.

The display of fruits at the last State Fair from our mountain counties made one of the most valuable and interesting features of the exhibition. A comparison of the same varieties with those raised in the valleys, illustrated very strikingly the superiority of the former in many respects over the latter. The mountain fruit is more highly flavored, more compact and finer grained, and more tart and juicy. The mountain fruit ripens much later, and is also much superior to that of the valley in keeping qualities. The same varieties of apples, for instance, that ripen in the valleys in September, when raised in the mountains as high up as Placerville, will keep well until February or March and even later, before becoming mellow and good for eating purposes. This latter fact is one of immense value to our State as a fruit growing country, and will in time drive the Oregon winter apples entirely out of our markets. It will enable us to enjoy a plentiful supply of green apples through the entire year. The imperfect means at the command of the Board for collecting reliable statistics of many of our products, render it impossible for us to report even approximately as to the quantity or value of the fruit raised in the State. As an illustration of the adaptability of the foothills and mountains to this industry, and the proportions it is assuming in these districts, we are assured that during the months of August, September, and October last, from the orchards and vineyards within a radius of six miles about the City of Placerville, there was picked and marketed over one hundred thousand dollars worth of fruits. The value of the dried and winter fruits produced within the same districts, it is said will probably equal this amount. Add to this the value of the wines and brandy made within this same radius, and from grapes sold and shipped to Sacramento for manufacture, estimated at fifty thousand dollars more, and we have the sum of two hundred and fifty thousand dollars as the value of the product of fruit culture in a small section of one of our mountain counties which but a few years ago contained not a fruit tree or a vine, and was considered worthless except for the gold that could be mined from its soil. When we state that a very large proportion of the land embraced within this same section is still unoccupied and subject to be purchased at government rates, and that not one out of twenty of the occupied places contains bearing orchards or vineyards, some idea of the vast agricultural and horticultural resources of the mountain districts of our State may be formed. It is a remarkable fact that the owners of nearly

every one of the most valuable orchards and vineyards that have produced these astonishing results made their beginning in a small way, as doubtful experiments. With no other capital but good health and a will to work, they have, by patient economy, frugality, and persevering industry, accumulated valuable fortunes for themselves and at the same time become benefactors to their fellow men. Let those of our fellow citizens who are without labor, if they would enjoy like thrift and prosperity, imitate their example.

SHEEP HUSBANDRY.

This is another industry well adapted to our climate, and one that has proved very successful and profitable here. The seasons are so mild and favorable that the increase is very rapid, and the ranges have been generally so good heretofore that flocks have not required any additional food. The wool has as a general thing considerably more than paid all expenses of keeping, herding, and shearing the flocks, while the increase of sheep, with good care, has averaged at least seventy-five per cent per annum. Those who ten years ago started in the business with a few hundred head of sheep and have remained in it, can now count their flocks by the thousands and tens of thousands. Of late years, however, a considerable difficulty has been experienced by the owners of large flocks to secure sufficient pasture for them. The ranges have been curtailed by the appropriation of the public lands for other agricultural purposes, and owners of sheep are finding it necessary to seek other ranges or buy the land required to support their flocks. Without some precaution or provision for an unfavorable season like that of eighteen hundred and sixty-three and eighteen hundred and sixty-four, or the fore part of the present Winter, the owners of large flocks are most certain to meet with heavy losses whenever such seasons occur. Again, by allowing the condition of the sheep to become low, the staple of the wool clip of the succeeding shearing is materially injured. These circumstances point to the necessity of adopting a different system of sheep husbandry. We would suggest the seeding down portions at least of ranges to alfalfa, some of which might be used for pasture during the season when the natural grasses are the poorest, and portions for cutting hay to be used when it may become necessary. We would here also repeat our former recommendations—that the farmers of the State enter upon the practice of keeping small flocks of sheep on their farms in connection with their cows, hogs, and other farm stock. Thus they will diversify and increase the industries and multiply the sources upon which they depend for the receipts and profits of the farm. They may also in this way provide a ready supply of meats for their families at all times without even feeling the cost. A few acres of Chile clover set aside as a general stock pasture and a stack of wheat straw will be about all the provisions necessary to keep up a respectable supply of the live stock for the farm.

WOOL.

While, for want of reliable information on the subject, we are unable to state the number of sheep in the State, or the increase from year to year, we are able from commercial reports to give the annual wool clip, and thus indirectly show the rapid increase of our flocks. During the five years commencing in eighteen hundred and sixty-three and ending with eighteen hundred and sixty-eight, the average annual increase of

our wool clip was one million five hundred and ninety-one thousand three hundred and forty-two pounds. The clip of eighteen hundred and sixty-eight was fourteen million two hundred and thirty-two thousand and fifty-seven pounds, while that of eighteen hundred and sixty-nine was fifteen million four hundred and thirteen thousand nine hundred and seventy pounds, showing an increase in that year of only five hundred and twenty-two thousand six hundred pounds. This falling off in increase was attributable to scarcity of food on the ranges and consequent poor condition of the sheep. The clip of eighteen hundred and seventy shows a larger increase than on any previous year, the clip of the latter year being twenty-one million eight hundred and seventy-two thousand six hundred and sixty pounds. The value of the wool exported in the last three years is, respectively, two million four hundred and thirty-six thousand five hundred and ninety-four dollars, two million three hundred and seventy thousand one hundred and sixty-five dollars, and three millions six hundred and fifty-five thousand dollars. It will be seen that the value of wool exported in eighteen hundred and seventy appproximates to one half of the value of wheat exported in the same year. It is stated by those best able to judge in the premises that very fine blooded flocks deteriorate rapidly in this State, and that very fine wooled sheep are consequently not so well suited to our dry climate as those of medium grades. In view of these facts it is suggested that an infusion of blood of long wooled sheep would be an improvement to most of the flocks of the State.

COTTON.

Experiments in the cultivation of cotton have been successfully made on a small scale in all the valley portions of our State. In eighteen hundred and sixty-four several parties, stimulated by the premiums offered by the Legislature, planted in some of the southern counties as high as a hundred acres each. They all labored under the disadvantages of want of experience and skill in the business, and want of good seed of the varieties adapted to our soil and climate, besides many other adverse circumstances that always attend the introduction of new industries into new countries on a large scale without proper previous preparation. The results of these large experiments were more than could have been expected under the circumstances.

The crops from the seed of the varieties known as the Petit Gulf and Tennessee Upland were more than an average of crops from the same variety grown in the Southern States. The quality was pronounced by experienced judges good.

Owing to the difficulties of securing, preparing, and marketing the cotton, and there being no longer any hope of encouragement by the State, the cultivation was abandoned. Experiments have been made in the Merced Valley during the past season, however, by a gentleman of great experience in cotton culture in the Mississippi Valley, which prove to his entire satisfaction that nearly all of our great river bottoms are peculiarly adapted to the successful and profitable prosecution of this industry. The average yield of cotton per acre in the Mississippi River bottoms is two hundred pounds, while by the experiment referred to five hundred pounds was produced per acre. The product was sent for examination to the Board of Cotton Brokers of Memphis, Tennessee, and was by them pronounced equal to the best "Middling Upland" of the South, the staple being finer. It has been generally the received

opinion in the South that a good supply of Summer rains was indispensable to the successful production of cotton; but the experiments made here have proved the fallacy of this theory, and seem to point to its opposite as more correct, that cotton produced without Summer rains is superior.

The Petit Gulf Seed, and varieties derived from it, are recommended for planting in this country.

Quite a large breadth of land in the Merced Valley will be planted to cotton the coming Spring, and we indulge strong hopes of its satisfactory success. Its general cultivation would be of great value to the State, both to agricultural and manufacturing industries. It would furnish employment to labor during those portions of the year when such employment is now most difficult to obtain. Until our industries are so diversified and multiplied as to give labor employment the year round California can never come up to a proper maximum of prosperity.

RAMIE.

This textile plant has been experimentally cultivated by a few individuals in the State during the past year. The result seems to be satisfactory as to its adaptability to our soil and climate. The great obstacle to the general cultivation of this most valuable fiber has been the want of proper machinery to separate and prepare it for manufacture. When this machinery shall be introduced, we have no doubt its cultivation will become a valuable acquisition to California.

FOREST CULTURE.

In our report to the Legislature a year since, we gave this subject a full and careful consideration. In view of the rapid consumption and destruction of timber on this coast, and the natural climatic influences operating against the reproduction of natural forests, we deem it of the utmost importance that artificial forest culture shall be fostered and encouraged in every possible manner. We believe that as a strictly financial operation the cultivation of forests for timber, lumber, and wood in this State may be made eminently successful.

For the purpose of calling the attention of our landowners to this subject, the Board, last Spring, offered fifty dollars for the largest quantity of useful forest trees planted during the year.

We have now three claimants for this premium: E. F. Aiken and Thomas Edwards, of Sacramento county, and James T. Stratton, of Alameda county. Aiken states that he has planted of Lombardy poplar and Balm of Gilead, five thousand; multicaulis, seven thousand five hundred; morus alba, twenty-five hundred; California black walnut, ten thousand; American white maple, four thousand; American white elm, five thousand; English elm, two thousand; Spanish chestnut, four hundred; American chestnut, five hundred. He remarks: The last five varieties were imported from the Atlantic States at considerable expense and planted in March last, and have done so well that I have ordered several thousand to set out the coming season. The elm and maple have grown from four to seven feet this season.

Edwards proves that he has seven thousand locust trees, half one and half two years old since they were planted out in the form of a forest, being some four years old from the seed. They are planted in rows alternately eight and ten feet apart, and four feet apart in the rows.

Edwards' trees are doing well. He estimates the probable expense of care and cultivation at about ten dollars per year, and remarks that in ten years he expects to have fence posts enough to fence all his own land and some to spare for his neighbors.

Stratton proves that he has planted out on fifty-three and a half acres of land thirty thousand blue gum (or eucalyptus globulus) trees, and three thousand red gum trees. His trees were planted in forest form during the last planting season, and were in August last on an average four and a half feet high. They are planted eight feet apart each way. They were grown from seed gathered in December, eighteen hundred and sixty-eight, from trees belonging to Stratton then seven years old. Stratton estimates the cost at about one hundred and fifty dollars per acre before any revenue will have been derived from them, which he thinks will probably be in about seven years. The eucalyptus is a native of Australia, where it is considered a very valuable forest tree, being used extensively for piling, flooring, and other purposes. Thus it will be seen that we have made a beginning in the cultivation of artificial forests.

IMPROVEMENTS IN STOCK.

The annual exhibition of stock, both horses and cattle, at the State Society Fair the past few years have shown most conclusively that California is not surpassed by any other portion of the world as a stock growing country. The appearance on the Fair grounds at the last exhibition for the first time of many superior specimens of imported thoroughbred horses, cattle, and sheep indicates that our people fully appreciate the advantages to be secured by the introduction of the best breeds of animals. The improvement indicated in our California bred colts over their dams and sires and creditable performances on the track speak well for the judgment and intelligence of our stock breeders and give promise that California may at no distant day present the best turf record of the world.

GENERAL CONDITION OF THE STATE.

It was generally anticipated that the completion of the Pacific Railroad would bring to our shores a large immigration from the eastern States, introduce among us a large additional circulating capital, and consequently give a general impulse to business on this coast. For reasons now generally understood and much to be regretted, these anticipations have not been realized to the extent expected. On the contrary, our merchants, manufacturers, mechanics, and many classes of our agriculturists found themselves, by this event, brought face to face in sharp competition with the merchants, manufacturers, mechanics, and agriculturists of the eastern States, not only in the general commerce of the world, but in supplying thousands of necessary articles of consumption, wear, and use to the people of the States and Territories of the Pacific slope. Our eastern competitors had the advantage of us in many respects. Their habits of living were more frugal and economical; their modes of business more close and careful. Their products had been made by cheaper labor. They were satisfied with less profits. While the money with which all their business operations were carried on and sustained was rated at an interest of but six and seven per cent per annum, that with which we were operating was rated at from twelve to fifteen per cent. With such odds against us it could not be

otherwise than that all our industries would feel the effects of the contest. They did feel it. General disappointment at the turn things had taken ensued, and general depression of all kinds of business was the consequence. The natural resources of the State are too great and valuable to lie dormant. The determination, perseverance, and energy of our people cannot be conquered, and we now see on all sides evident indications of change for the better. Greater prudence and economy in life and business is the order of the day. Large tracts of land, heretofore held at extravagant speculative prices, are being broken up into small farms and sold for agricultural purposes at reasonable rates. A greater variety and diversity of agricultural and mechanical industries are being introduced. A healthy commerce is growing up between the Pacific and Atlantic States, to the mutual advantage of all The surplus capital of foreign countries is feeling and preparing its way for safe and permanent investment among us, and promises to reduce to reasonable rates the interest on money. Rents and labor are moderating their demands in accord with the general changes of the times, and the Board feel warranted in congratulating the people of the State upon the flattering prospects of substantial progress and improvement in the immediate future.

PERMANENT IMPROVEMENTS.

During the past year the Board have made many valuable improvements and additions to the society's property. In connection with the county, which has always manifested the most enlightened liberality toward the society, an addition has been made to the pavilion which has increased the capacity of the building for exhibition purposes one half. Other improvements of an important and permanent character have also been made to the building. At the park all the stalls have been raised and furnished with permanent roofs and doors. Over the different gateways, other than the main entrance and exit gates, have been constructed comfortable sleeping apartments for the accommodation of grooms and others having the care of valuable stock during the Fairs. Also, new and appropriate judges', reporters' and visitors' stands have been erected, and other valuable and necessary improvements of a permanent character made. The expense to the society for these improvements has been the sum of six thousand dollars.

PURCHASE OF REAL ESTATE.

The northern half of the inclosed grounds used by the society has heretofore belonged to an association known as the Union Park Association. The original cost of the property to the association was seven thousand two hundred dollars, divided into seventy-two shares of one hundred dollars each. By an understanding at the organization of the association, the society were to have the free use of the ground for purposes of the Fair for an indefinite time, but the rents went to the association. The society have purchased fifty-two shares of the property at the original cost, or five thousand six hundred dollars, and will probably be able to obtain the remaining sixteen shares at the same rate. The south half of the park grounds are held by the society under a lease of ninety-nine years, at a nominal rent. The whole park has been rented for the ensuing year for three thousand six hundred and sixty dollars; the lessee at his own expense to put the whole place in condition for the society's Fair.

FINANCES OF THE SOCIETY.

Balance in treasury January 30th, 1870		$61 84
Unexpended appropriations		2,838 00
Total receipts for the year		33,932 60
Cash assets for the year		$36,879 44
CONTRA.		
Incidental expenses	$28,428 68	
Permanent improvements	6,000 00	
Paid for real estate	5,600 00	
Total expenditures		40,028 68
Deficit in treasury		$3,149 24

The State owes the society a balance of undrawn appropriations for the year—which will soon be paid—of three thousand dollars. This will reduce the deficit in the treasury, or the debt of the society, to one hundred and forty-nine dollars and twenty-four cents.

THE FAIR FOR EIGHTEEN HUNDRED AND SEVENTY-ONE.

The Board propose, with the assistance of the people of the State, to make this Fair a real exposition of all the industries of the State. To this end a new and comprehensive premium list will be prepared and published at once, embracing the products of every industry on the coast, and offering liberal premiums for their exhibition. By personal correspondence, circulars, and an extensive distribution of premium lists, we propose to reach the representatives of every industry on the coast, and endeavor to wake up in them a renewed and earnest interest in their development, and in the general exhibition of samples of their products at the coming Fair. We propose also to secure the service of a reliable and competent person to visit in behalf of and as a representative of the Board every important locality in the State, for the double purpose of enlisting the active coöperation of all the people in behalf of the efforts of the society, and collecting valuable facts and statistics of our industries and resources for publication and general distribution at home and abroad. In the furtherance of these objects we shall endeavor to establish a perfect good understanding between the State Society and each of the District and County Societies now organized in regard to the times of the exhibitions of each, and to form some general plan by which each of such societies may be represented by the products of the industries embraced in their district at the general exhibition of the State Society. To secure the success of this plan we hope to induce the organization of industrial societies embracing every county in the State. With such a system of societies, organized for such purposes, and directed with an honest purpose for their accomplishment, it is believed that the labor, skill, and capital of our people can be rendered much more productive.

FINANCIAL REPORT

OF THE

STATE AGRICULTURAL SOCIETY

FOR

THE YEAR 1870.

Date.	On what account.	Amount.
1870.	RECEIPTS.	
January 30.....	Unexpended appropriations.....	$2,883 00
"	From Dr. Renz.....	6 00
"	Robert Allen, rent of Park.....	500 00
"	Memberships.....	930 00
May 30.....	Robert Allen, rent of Park.....	500 00
July 20.....	Robert Allen, rent of Park.....	300 00
August 18.....	Rebate on currency.....	1 00
September 5.....	Samuel Poorman, pool privilege.....	2,000 00
September 12...	For bar privilege.....	85 00
"	Remittance to I. N. Hoag, returned from Auburn.....	50 00
"	Receipts at Park, Thomas Hall.....	1,990 00
"	Receipts at Pavilion, J. Smith.....	1,925 50
"	Entries to races.....	520 00
September 13...	Receipts at Park.....	2,140 00
"	Receipts at Pavilion.....	1,352 50
"	Entries to second race added.....	500 00
"	Entries to third race.....	480 00
September 14...	Receipts at Park.....	1,961 00
"	Receipts at Pavilion.....	1,186 50
"	Entries to races.....	680 00
September 15...	Receipts at Park.....	2,353 75
"	Receipts at Pavilion.....	1,191 50
"	Entries to first and second races.....	670 00
"	Entries to third race added.....	300 00
September 16...	Receipts at Park.....	1,739 30
"	Receipts at Pavilion.....	850 50
"	Entries to races.....	440 00
September 17...	Receipts at Park.....	1,017 25

Date.	On what account.	Amount.
September 17...	Receipts at Pavilion	$361 50
"	Entries to races	890 00
"	Purses returned	542 00
"	Cider privilege	52 20
"	Rent of refreshment room	25 00
"	Balance from J. E. Smith	10 50
"	Collected for memberships sold at election	15 00
"	Memberships sold since election	85 00
"	State warrant	5,000 00
"	Robert Allen, rent of Park	489 00
"	Robert Allen, balance of rent	411 00
"	R. S. Carey, rent	26 00
"	J. C. Carroll & Co., rent feed house	50 00
January, 1871...	A. A. Wood, rent of Park	305 00
		$36,815 30
	Balance in hands of Treasurer at last election	61 84
	State appropriation not yet received	3,000 00
		$39,877 14
	Amount of indebtedness	151 54
	Total	$40,028 68

Date.	On what account.	Amount.
1870.	CASH PAID TO TREASURER.	
		$2,883 00
January 30.....	R. T. Brown, Treasurer, as per receipt.....	500 00
January 30.....	R. T. Brown, Treasurer, as per receipt.....	930 00
May 30.....	R. T. Brown, Treasurer, as per receipt.....	500 00
August 2.....	R. T. Brown, Treasurer, as per receipt.....	300 00
September 5.....	R. T. Brown, Treasurer, as per receipt.....	2,000 00
September 12...	R. T. Brown, Treasurer, as per receipt.....	3,915 50
"	R. T. Brown, Treasurer, as per receipt.....	1,460 00
September 13...	R. T. Brown, Treasurer, as per receipt.....	3,492 50
"	R. T. Brown, Treasurer, as per receipt.....	570 00
September 14...	R. T. Brown, Treasurer, as per receipt.....	3,125 00
September 15...	R. T. Brown, Treasurer, as per receipt.....	3,575 25
"	R. T. Brown, Treasurer, as per receipt.....	1,700 00
September 16...	R. T. Brown, Treasurer, as per receipt.....	2,589 80
September 17...	R. T. Brown, Treasurer, as per receipt.....	1,456 25
"	R. T. Brown, Treasurer, as per receipt.....	1,472 00
October 8.....	R. T. Brown, Treasurer, as per receipt.....	26 00
October 10.....	R. T. Brown, Treasurer, as per receipt.....	489 00
November 1.....	R. T. Brown, Treasurer, as per receipt.....	411 00
November 14...	R. T. Brown, Treasurer, as per receipt.....	50 00
"	R. T. Brown, Treasurer, as per receipt.....	11 50
1871.		
January 3.....	R. T. Brown, Treasurer, as per receipt.....	5,000 00
"	R. T. Brown, Treasurer, as per receipt.....	305 00
January 23.....	R. T. Brown, Treasurer, as per receipt.....	53 50
		$36,815 30
	Balance in hands of Treasurer at last election	61 84
	Total.....	$36,877 14

Date.	On what account.	Amount.
1870.	DISBURSEMENTS.	
January 30.....	Robert Beck's salary for January.....	$150 00
"	W. B. Ready, premium.....	10 00
"	John N. Andrews, engraving.....	30 00
"	I. N. Hoag, balance for writing report, 1868 and 1869.....	200 00
February 7.....	E. S. Bingham, premium.....	5 00
February 8.....	Withington & Bagley, premium.....	2 00
"	Crump, fixing seats for election.....	1 00
"	Thomas Hall, clerk at election.....	5 00
"	B. Bullard, clerk at election.....	10 00
February 17.....	Mrs. Graham, premium.....	40 00
February 22.....	Robert Beck, salary for February.....	150 00
March 4.....	Mrs. Cronkite, premium.....	3 00
March 7.....	*Daily Record*, advertising.....	3 00
March 8.....	D. Gardiner, wood.....	12 00
March 29.....	J. S. Harbison, trees and planting.....	30 00
April 1.....	Robert Beck, salary for March.....	150 00
April 2.....	F. Foster, binding books.....	37 50
April 12.....	Post Office bill.....	8 00
April 18.....	*Sacramento Reporter*, advertising.....	3 00
April 27.....	Henry Freeman's bill.....	10 00
May 4.....	Robert Beck, salary for April.....	150 00
May 12.....	Express envelops and ink.....	6 50
"	Postage stamps, currency, $5.....	4 50
May 19.....	Robert Beck, salary for May.....	150 00
June 7.....	W. A. Latin, premium.....	5 00
June 18.....	R. J. Merkely, premium.....	25 00
June 29.....	100 Wells, Fargo & Co.'s envelops.....	5 00
"	100 postage stamps, currency, $3.....	2 70
"	350 postage stamps, currency, $7.....	6 30
"	Express charges on "Trotting Rules".....	75
July 1.....	Robert Beck, salary for June.....	150 00
July 9.....	W. Fern, premium.....	15 00
July 13.....	J. N. Andrews, engraving.....	3 12
July 18.....	Thomas Edwards, premium.....	30 00
July 26.....	Miss M. Myers, premium.....	10 00
July 30.....	Rippon & Hill's bill.....	13 00
August 1.....	R. Walton's bill, lumber.....	15 00
"	250 postage stamps, currency, $5.....	4 50
"	100 Wells, Fargo & Co.'s envelops.....	5 00
"	Latch key to office.....	75
"	Grinding scissors.....	50
"	National Turf Congress Rules.....	30 00
August 2.....	D. O'Connor, carpenter.....	3 00
"	Robert Beck, salary for July.....	150 00
August 4.....	Insurance on Park buildings.....	160 00
August 15.....	P. Chatterton, carpenter.....	40 00

Date.	On what account.			Amount.	
August 18.....	Wilkes' *Spirit of the Times*, advertising, currency.....	$118	75		
"	Admission fee to National Turf Congress, currency.....	75	00		
"	Post office order for above.....	1	00		
	Currency.....	$194	75	$175	28
August 20.....	R. Walton & Co., lumber.....			100	46
"	I. N. Hoag, canvassing, on account.....			50	00
August 23.....	Post office bill.....			8	00
"	Mrs. Shipman, premium.....			3	00
"	Booth & Co., bill of shakes.....			500	00
"	B. Dennery's bill of spittoons.....			6	00
August 30.....	I. N. Hoag, on account of canvassing.....			50	00
September 1...	R. Beck, salary for August and September...			300	00
September 5...	P. Chatterton, on account, carpenter.....			40	00
September 8...	H. S. Crocker & Co., stationery, etc.....			34	00
September 10...	James Contell, show cases.....			140	00
September 12...	F. M. Henderson, carpenter.....			16	50
September 13...	W. A. Mott, washing drilling.....			10	00
September 15 ..	James McGinn, labor.....			12	00
September 19...	I. N. Hoag to W. P. Coleman, on account....			50	68
	To W. P. Coleman, the following bills:				
"	A. Hamburger's.....	$28	25		
"	B. Hamburger's.....	8	25		
"	Joseph Bailey's.....	7	00		
"	G. C. Hall's.....	1	75		
"	Mrs. F. Blackleach's.....	16	00		
"	Badger's.....	1	25		
"	Bert. Nevell's.....	21	60		
"	R. Dale's.....	5	25		
				89	35
"	H. O. Hale, building ticket office.....			136	46
"	David Woods, carpenter.....			162	50
"	R. P. Wingate, Marshal at Park.....			30	00
"	James H. Johnson, cleaning Pavilion.....			50	00
"	C. T. Jennings, Entry Clerk, lower Hall.....			36	00
September 20...	Samuel Deal, main gatekeeper.....			30	00
"	S. Jones, labor at Hall.....			6	00
"	James Miller, police.....			18	00
"	S. D. Van Horn, police.....			24	00
"	W. F. Knox, on account of new roof.....			500	00
"	F. S. Lardner, Superintendent upper Hall....			70	00
"	Mrs. M. E. Jackson, chambermaid.....			15	00
"	P. Canagher, police.....			9	00
"	G. G. W. McCurdy, doorkeeper.....			32	00
"	Norton Bush, premium.....			25	00
"	P. W. Burnett, fixing shafting.....			137	00
"	Thomas Hall, Ticket Clerk at Park.....			30	00
"	George T. Glover, Ticket Clerk at Park.....			24	00

Date.	On what account.	Amount.
September 20...	Thomas Byrne, labor at Hall	$33 00
"	Henry France, engineer	82 50
"	Wachhorst's bill	82 50
"	J. W. Andrews' bill	12 50
"	A. C. Bidwell, gatekeeper	30 00
"	John Shellars, police	18 00
"	J. T. Carey, Entry Clerk	40 00
"	N. V. Hatch, carpenter	122 50
"	N. R. Hathaway, carpenter	88 50
"	W. S. Gray, fireman	9 00
"	W. J. Wallace, Ticket Clerk at Park	24 00
"	J. W. Taylor, gatekeeper	30 00
"	H. McKeune, carpenter	12 00
"	H. Lane, labor	30 00
"	Patrick Lynch, labor	42 00
"	Howard Campion, premium	25 00
"	H. M. Willard, stairkeeper	18 00
"	William Mace, doorkeeper	32 00
"	George Bingham, fireman	27 00
"	Barney Flinn, labor	36 00
"	S. F. Hyde, gatekeeper	24 00
"	Isaac Galloway, labor	18 00
"	R. P. Bartlett, police	18 00
"	C. L. Knowles, Superintendent	50 00
"	Maurice Conner, labor	54 00
"	A. H. Norton, carpenter	33 00
"	P. Chatterton, carpenter (balance)	152 00
"	P. W. Cafferty, police	18 00
"	Robert Williamson, premium	129 00
September 26...	W. H. Duncan, Clerk in Secretary's office	168 00
"	Russell & Winterburn, printing bill	328 00
"	Van Every & Son, premium	5 00
"	Jesse Slaughter, whitewashing, etc	54 00
"	G. W. Whitlock, decorating hall, etc	69 00
"	Sacramento *Reporter*, advertising	69 50
"	San Francisco *Spirit of the Times*, advertising	80 00
"	W. I. Stoddard, canvassing San Francisco	100 00
"	Miss Landon, premium	5 00
"	F. M. Chapman, livery bill	42 00
"	Sacramento Gas Company, gas bill	225 00
"	P. J. Hopper, advertising	12 00
"	Parker & Hunt, premium	20 00
"	J. E. Smith, Ticket Clerk	30 00
"	E. H. Pomeroy, Ticket Clerk	25 00
"	David Bush, gas fixtures (on account)	500 00
"	S. E. Harvey, stairkeeper	18 00
"	James Anthony & Co., advertising, etc	259 50
"	H. S. Crocker & Co., stationery, etc	54 75
"	Marysville *Standard*, advertising	15 00
"	John Bruener, rent of furniture, etc	68 50

Date.	On what account.	Amount.
September 26...	Whittier, Fuller & Co., glazing	$ 25 80
"	I. N. Hoag, balance of bill, as audited	134 32
"	John F. Wall & Co., sawdust	24 00
"	J. M. Eckfelt, screen wire	153 48
"	*Northern Enterprise*, advertising	7 50
"	Stockton *Independent*, advertising	12 00
"	George Schmeiser, on account of bill	250 00
"	James McGuire, for bell	102 50
September 27...	William Caswell, bill posting	26 00
"	W. P. Michenor, drilling	25 73
"	Cadwalader & Leonard, office rent, etc	31 50
"	*Petaluma Journal*, advertising	6 00
"	*Daily Record*, advertising	62 75
"	Hamburger & Co.'s bill	50 20
"	Locke & Lavenson's bill	281 55
"	Huntington & Hopkins' bill	35 64
"	Baker & Hamilton's bill	24 75
"	R. Watson & Co., lumber	58 56
"	William Crump, watchman	40 00
"	A. S. Greenlaw, premium	20 00
"	John Isaacs, police	30 00
"	R. L. Bampton, stairkeeper	14 00
"	David Cross, draying	6 00
"	S. H. Davis, hardware bill	248 46
"	Orleans Hill Vinicultural Association, premium	40 00
September 28...	Keyt & Co., distributing posters	5 50
"	Thomas May, draying	4 50
"	A. Brokaw, police	27 00
"	A. H. Estell, Entry Clerk at Park	30 00
"	J. H. Sullivan, baluster	6 75
"	B. F. Cummings, making purses	10 00
"	W. D. Comstock, bedstead hire	2 50
"	D. G. Webber, straw bill	192 25
"	John Shellers, police	6 00
"	William Harron, Clerk at Park	30 00
"	*Sacramento Journal*, advertising	15 00
"	W. L. Smith, paper hanging, etc	21 27
"	T. D. Scriver, hack hire	42 50
"	W. I. Stoddard, express	9 75
"	*San Francisco Chronicle*, advertising	56 00
"	W. H. Keep, premium	10 00
"	David Bush, on account	500 00
"	*Daily Bee*, advertising	37 00
"	A. J. Holland, police	9 00
"	G. W. Leitch, extra night watch	6 00
September 29...	George Schmeiser, on account	60 00
September 30...	Charles Heinrich, premium	10 00
"	J. S. Bamber, premium	18 00
"	Peter Humrich, hack hire	25 00

Date.	On what account.	Amount.
October 1.....	*San Francisco Bulletin*, advertising.....	$42 00
"	F. S. Malone, livery bill.....	32 50
"	P. Johnson, labor.....	21 00
"	W. H. Duncan, clerk.....	18 00
"	George Herged, wood.....	66 00
"	John Smith, premium.....	8 00
October 7.....	Hunt & Anderson's bill.....	37 00
"	Robert Anderson's bill.....	174 74
"	Miss Emmons, premium.....	10 00
"	C. H. Krebs, bill.....	30 00
"	Nell Flaherty's entry returned.....	80 00
"	N. L. Drew & Co., on account of lumber.....	1,000 00
"	George Schmeiser, balance of bill.....	52 23
"	James Contell, making stand.....	85 38
"	H. Smith, carpenter.....	4 00
"	T. D. Scriver, bill.....	7 50
"	J. R. Nickerson, premium.....	75 00
"	M. T. Barr, premium.....	3 00
"	S. Ryan, carpenter.....	6 00
"	Henry Austin, carpenter.....	7 50
"	Barney, carpenter.....	4 00
October 10.....	O. Hannaghan, carpenter.....	6 00
"	C. Smiley, carpenter.....	4 00
"	N. L. Drew, balance of bill of lumber.....	392 00
"	Estate of C. C. Freeman and J. Sims, hay.....	644 50
"	J. W. Avery, lumber.....	43 50
"	S. Wilinski, premium.....	5 00
"	A. J. Steiner, premium.....	10 00
October 12.....	C. F. Reed, expenditures.....	1,000 00
October 14.....	Casey & Dwyer, nails.....	5 37
"	O. Bonney, premium.....	10 00
"	B. Bullard, Assistant Secretary.....	84 00
"	H. Stone, premium.....	15 00
"	L. Sweeny, premium.....	20 00
October 17.....	California Jewelry Company, medals.....	309 00
"	John Bruener, premium.....	120 00
October 18.....	C. H. Wattles, carpenter.....	6 00
"	Mrs. Boggs, premium.....	10 00
"	W. B. Ready, premium.....	20 00
"	M. S. Bowdish, premium.....	10 00
"	D. Flint, premium.....	80 00
"	J. Hutchinson, premium.....	20 00
"	Mrs. W. E. Brown, premium.....	30 00
"	George West, premium.....	10 00
"	Friend & Terry, lumber.....	5 18
"	George H. Baker, lithograph and diplomas...	416 00
"	J. Creighton, premium.....	15 00
"	Robert Beck, bill of expenditures.....	120 50
"	Robert Beck, salary for October.....	150 00

Date.	On what account.	Amount.
October 18.....	Enoch Dole, police.....	$18 00
"	Pacific Quartz Company, roofing.....	90 00
"	H. Ramsay, police.....	6 00
"	Pioneer Mills, premium.....	10 00
"	Mrs. Powers, for Mrs. Jones, premium.....	5 00
September 16...	L. Wilson, carpenter, ten days at $4.....	40 00
September 19...	E. Brown, to mend chair broken while on exhibition.....	1 00
"	J. P. Rainbow, mend swing broken while on exhibition.....	5 00
"	D. Clark, policeman, 6 days at $3.....	18 00
"	O'Brian, drayage at Park.....	30 00
"	J. R. Saunders, carpenter, 9½ days at $4.....	37 00
"	A. M. Womble, Ticket Clerk at Hall, 6 days at $3.....	18 00
"	J. R. Nickeson, membership overpaid.....	5 00
"	William Toll, stairkeeper, 6 days at $3.....	18 00
"	J. P. Brissell, police, 6 days at $3.....	18 00
"	William Parker, police, 5 days at $3.....	15 00
"	J. H. Johnson, police, 7 days at $3.....	21 00
"	R. H. Babbit, police, 6 days at $3.....	18 00
"	E. Buttler, police, 6 days at $3.....	18 00
"	George Faylor, police, 6 days at $3.....	18 00
"	W. A. Faylor, police, 6 days at $3.....	18 00
"	B. F. O'Dell, police, 4 days at $4.....	16 00
"	G. W. Leitch, stairkeeper, 6 days at $3.....	18 00
"	C. L. Dell, Ticket Clerk, 6 days at $3.....	18 00
"	B. H. Murphy, for glass box broken while on exhibition.....	2 50
"	M. Richardson, labor.....	8 50
"	G. F. Lang, stairkeeper, 6 days at $3.....	18 00
"	James Connell, police, 3 days at $3.....	9 00
"	J. W. Perry, labor, 7 days at $3.....	21 00
"	G. M. Cornwall, carpenter, 8 days at $4.....	32 00
"	Frank Swift, doorkeeper.....	22 00
"	H. M. Bernard, water tank hinges.....	5 00
"	D. F. Gillis.....	5 00
"	E. W. Walton.....	10 00
"	J. H. Wolf.....	19 00
"	D. L. Perkins.....	28 00
"	Mrs. William Yule.....	10 00
"	J. C. Devine.....	55 00
"	S. W. Shaw.....	10 00
"	Nash, King, Miller & Co.....	10 00
"	David Fulton.....	5 00
"	Mrs. Goldsmith.....	5 00
"	P. Philips.....	3 00
"	O'Brian & Dalton.....	40 00
"	Miss Jennie Bradley.....	5 00
"	Nichols, Falvey & Co.....	10 00

Date.	On what account.	Amount.
September 19...	T. B. Jackson	$ 5 00
"	D. H. Woods	65 00
"	Mrs. E. Ellis	10 00
"	Miss Helen Low	3 00
"	E. Brown	5 00
"	Pollard & Carvill	50 00
"	Theodore Lerond	50 00
"	Jacob Zeck	60 00
"	Mrs. E. F. Aiken	46 00
"	T. K. Stewart	9 00
"	E. F. Aiken	5 00
"	N. Clark & Co	8 00
"	Baker & Hamilton	25 00
"	C. H. Hubbard	20 00
"	J. W. Snrsea	15 00
"	Matteson & Williamson	30 00
"	C. W. Hoyt	33 00
"	R. J. Merkley	5 00
"	Mrs. Odbert	3 00
"	John F. Cooker	5 00
"	A. B. Gilbert	35 00
"	E. W. Gavitt	25 00
"	W. Cites	5 00
"	E. Soule	25 00
"	J. C. Meussdorffer	5 00
"	D. H. Quinn	5 00
"	D. S. Moulton	5 00
"	Mrs. Odbert	6 00
"	A. T. Cotton	15 00
"	Hobson & Ayres	20 00
"	B. Dennery	10 00
"	Mrs. A. S. Morrison	2 00
"	S. H. Davis	10 00
"	Nathan Coombs	75 00
"	L. P. Marshall	50 00
"	John Hall	40 00
"	J. Glucauf	30 00
"	John Hall	20 00
"	John Glucauf	60 00
"	John Dixon (Emma Barnes)	40 00
"	George Treat	50 00
"	John Hall	30 00
"	John Glucauf	25 00
"	Theodore Winters	20 00
"	Theodore Winters	100 00
"	Theodore Winters	60 00
"	David Frame	75 00
"	Alexander Ely	50 00
"	D. W. Downey	40 00
"	R. H. Branton	20 00

Date.	On what account.	Amount.
September 19...	George McWain	$30 00
"	L. Upson	20 00
"	L. Upson	15 00
"	Peter Burnes	10 40
"	C. B. Hoffman	50 00
"	D. Berry	40 00
"	Alexander Ely	30 00
"	M. E. LaMurray	20 00
"	Alexander Ely	$20 00
"	Alexander Ely	40 00
"	C. H. Shear	50 00
"	C. B. Hoffman	30 00
"	Alexander Ely	20 00
"	Alexander Ely	15 00
"	Henry Meacham	40 00
"	C. Barr	30 00
"	A. T. Nordyke	20 00
"	J. N. Dudley	15 00
"	Maurice Haley	40 00
"	R. A. Branton	15 00
"	E. M. Skaggs	50 00
"	J. Colgrove	40 00
"	J. Colgrove	40 00
"	S. B. Whipple	40 00
"	J. Colgrove	30 00
"	F. W. Hatch	20 00
"	H. W. Hawkins (fine bridle)	
"	A. A. Trobridge	20 00
"	Alexander Ely	15 00
"	N. Coombs	150 00
"	E. Jacobs	50 00
"	Tom Edwards	40 00
"	E. Jacobs	20 00
"	R. J. Houston	15 00
"	C. Youngers	75 00
"	C. Youngers	40 00
"	Clark & Cox	30 00
"	G. N. Sweezy	25 00
"	C. Youngers	15 00
"	C. Youngers	50 00
"	G. N. Sweezy	40 00
"	C. Youngers	30 00
"	C. Youngers	20 00
"	C. Youngers	15 00
"	J. R. Rose	75 00
"	S. Daniels	30 00
"	J. R. Rose	25 00
"	J. R. Rose	15 00
"	S. Daniels	50 00
"	J. R. Rose	40 00

Date.	On what account.	Amount.
September 19...	S. Daniels	$30 00
"	S. Daniels	20 00
"	S. Daniels	75 00
"	S. Daniels	50 00
"	S. Daniels	20 00
"	E. Comstock	20 00
"	P. Burnes	15 00
"	G. N. Sweezy	10 00
"	J. D. Patterson	30 00
"	E. Comstock	20 00
"	Clark & Cox	15 00
"	G. N. Sweezy	10 00
"	C. Youngers	75 00
"	P. Burnes	20 00
"	C. Green	10 00
"	A. T. Nordyke	15 00
"	P. Burnes	15 00
"	P. Burnes	10 00
"	C. Green	20 00
"	Peter Burnes	5 00
"	Peter Burnes	5 00
"	C. Green	5 00
"	Peter Burnes	6 00
"	Peter Burnes	5 00
"	T. McConnell	30 00
"	T. McConnell	20 00
"	T. McConnell	20 00
"	Ellen McConnell	20 00
"	T. McConnell	20 00
"	J. H. Glide	20 00
"	A. S. McWilliams	20 00
"	A. S. McWilliams	20 00
"	Ellen McConnell	20 00
"	T. McConnell	15 00
"	Ellen McConnell	15 00
"	W. M. Landrum	30 00
"	W. T. Wilson	20 00
"	W. M. Landrum	20 00
"	Tom Butterfield & Son	20 00
"	P. Saxe & Son	20 00
"	W. T. Wilson	20 00
"	T. Butterfield & Son	15 00
"	H. A. Rawson	20 00
"	W. M. Landrum	20 00
"	W. T. Wilson	15 00
"	W. T. Wilson	15 00
"	P. Saxe & Son	10 00
"	T. Butterfield & Son	40 00
"	Gray & Gilmore	45 00
September	Paid purses at Park	10,000 00

Date.	On what account.	Amount.
September	Donation to George Houston.....	$100 00
November 8.....	Hiram Cook, premium.....	30 00
"	Mrs. J. Devine, premium, 1869.....	10 00
November 9.....	David Bush, premium.....	10 00
"	Lewis Deitz, premium.....	20 00
November 11...	Mrs. W. C. Barrett, premium.....	5 00
November 15...	P. A. Espina, premium.....	5 00
November 16...	F. Klotz, wood.....	10 00
November 17...	Mrs. M. Oatis, premium.....	10 00
November 18...	Larkins & Co., premium.....	15 00
"	Fred S. Butler, lettering diplomas.....	26 75
November 19...	Jerry Woods, police.....	18 00
November 25...	B. N. Bugbey, premium.....	40 00
November 28...	Yount & Fletcher, painting.....	38 00
"	Robert Beck, salary for November.....	150 00
December 1.....	Matteson & Williamson, premium.....	75 00
"	Robert Allen, bill of work.....	411 00
December 3.....	J. C. Carroll & Co., feed bill.....	48 00
December 6.....	C. T. Wheeler, one share Union Park stock...	100 00
"	Chris. Green, two shares Union Park stock...	200 00
"	P. Morrill, one share Union Park stock.....	100 00
"	J. M. Frey, one share Union Park stock.....	100 00
"	George Rowland, one share Union Park stock	100 00
"	F. M. Chapman, four shares Union Park stock	400 00
"	H. M. Bernard, one share Union Park stock..	100 00
December 7.....	John T. Carey, one share Union Park stock...	100 00
"	Robert Allen, one share Union Park stock...	100 00
"	F. S. Malone, one share Union Park stock....	100 00
"	C. G. Carpenter, premium.....	5 00
December 8.....	E. M. Skaggs, three shares Union Park stock	300 00
"	E. M. Skaggs, premium.....	40 00
"	W. P. Coleman, one share Union Park stock...	100 00
"	Robert Beck, one share Union Park stock.....	100 00
"	Hess & Clark, one share Union Park stock...	100 00
December 11...	John N. Andrews, engraving.....	79 88
"	H. Wachhorst, silverware.....	262 30
"	Whittier & Fuller's bill.....	26 00
"	N. Clark & Co., premium.....	10 00
"	James Farris, one share Union Park stock....	100 00
December 12...	C. G. Carpenter, premium.....	30 00
December 14...	Overpaid premium at Park.....	10 00
"	J. F. Harrison, premium.....	5 00
"	M. Willis, music.....	700 00
"	Tyree's entrance fee returned.....	50 00
"	J. D. Lord, one share Union Park stock.....	100 00
"	E. Mills, fourteen shares Union Park stock...	1,400 00
December 15...	J. Whitcomb, one share Union Park stock...	100 00
December 19...	George H. Baker, diploma.....	14 00
December 20...	Mrs. E. F. Aiken, premium.....	48 00
"	E. F. Aiken, premium.....	5 00

Date.	On what account.	Amount.
December 20...	P. A. Espina, filling diplomas	$60 00
"	J. W. Coleman, one share Union Park stock	100 00
December 22...	E. G. Jefferis, bill printing	73 50
"	Colusa Flour Mills, premium for 1868	15 00
"	I. L. Merrill, use of crockery	30 00
December 23...	J. A. Mason, one share Union Park stock	100 00
"	California Silk Manufacturing Co., premium	50 00
"	N. L. Drew, one share Union Park stock	100 00
December 24...	D. E. Callahan, one share Union Park stock	100 00
December 27....	B. R. Crocker, one share Union Park stock	100 00
"	Estate of John Arnold, one share Union Park stock	100 00
"	Estate of C. A. Peake, one share Union Park stock	100 00
December 28....	Robert Beck, salary, December	150 00
"	R. C. Terry, premium	25 00
"	F. M. Chapman, blanket	12 00
December 29....	William Johnson, premium	8 00
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January 3.....	Edwards & Co., stationery	58 50
"	L. Goss, one share Union Park stock	100 00
"	I. Lohman, one share Union Park stock	100 00
"	H. S. Beals, one share Union Park stock	100 00
"	G. G. Morgan, one share Union Park stock	100 00
"	D. W. Earl, two shares Union Park stock	200 00
"	T. M. Lindley, one share Union Park stock	100 00
January 4.....	John Gillig, one share Union Park stock	100 00
January 5.....	Samuel Jelly, silverware	89 50
January 9.....	*Daily Record*, printing	7 00
January 12.....	J. Bauquier, three shares Union Park stock	300 00
January 13.....	Edgerton & Smith, drawing lease	10 00
January 14.....	*Sacramento Reporter*, printing	12 50
January 16.....	John Klotz, wood	8 25
"	Justin Gates & Bros., bill	18 25
"	J. N. Andrews, engraving	6 85
"	H. S. Crocker & Co., bill	15 50
January 19.....	J. P. Robinson, one share Union Park stock	100 00
January 20.....	Summit Ice Company	21 74
January 23.....	Robert Beck	19 50
January 27.....	Robert Beck, salary, January	150 00
	Total	$40,028 68

GENERAL BUSINESS OF THE MEETING.

While the committee were engaged in examining the financial statement, the President announced that the next business in order was the election of officers.

I. Lohman moved that the Secretary be instructed to cast the vote of the Society for Charles F. Reed, present incumbent.

Mr. Reed stated that it was not his desire to be reëlected; that the duties of the position were arduous and required much valuable time in their discharge. But he could not fail to discover a somewhat general desire to have him remain as President of the Society, and at the earnest solicitation of his friends he would consent to act, provided the Society saw fit to reëlect him. There being no other nomination, the motion was put and carried unanimously.

Mr. Reed thanked the members for the honor they had thus conferred upon him, and said that his past record as presiding officer of the California State Agricultural Society must be their guarantee that his course in the future would be marked by efforts to advance, by every means in his power, the influence of the Society and the agricultural interests which it represents.

It was then announced by the Chairman that three Directors were to be elected for a term of three years, to fill vacancies caused by the expiration of the terms of R. S. Carey, H. M. Larue, and H. R. Covey.

W. F. Knox and Charles E. Greene were appointed Tellers.

The following named persons were placed in nomination:

R. S. Carey, H. M. Larue, H. R. Covey, H. M. Bernard, Colonel Younger, of Santa Clara, and J. R. Nickerson, of Placer. Several others were also named, but they withdrew.

First Ballot.

Whole number of votes cast	79
Necessary to a choice	40
Carey received	66
Covey received	61
Younger received	36
Nickerson received	23
Larue received	20
Bernard received	14

The Chair announced that Carey and Covey, having received the requisite number of votes, were reëlected as Directors for the ensuing term of three years.

Second Ballot.

Whole number of votes cast	65
Necessary to a choice	33
Younger received	43
Nickerson received	10
Scattering	12

Larue and Bernard withdrew.

The Chair announced that Younger was elected to the Board of Directors.

The Finance Committee not having concluded their labors, it was moved that they report to the Board of Directors, which motion was carried without dissent.

On motion, the meeting adjourned *sine die*.

DIRECTORS' MEETING—NO QUORUM.

It was announced previous to adjournment that a meeting of the Directors would be held immediately afterward in the Secretary's office. It was found, however, on calling the roll, that no quorum was present, and the meeting was accordingly adjourned until the fifteenth day of February, at two o'clock P. M., at which time the date for holding the next State Fair will be decided upon.

REPORT OF THE FINANCE COMMITTEE AS MADE TO THE BOARD.

SACRAMENTO, January 27th, 1871.

President and Directors State Agricultural Society:

GENTLEMEN: We, the committee appointed to examine the report of the Treasurer of the State Agricultural Society, report that we have examined his books and vouchers, and find them correct.

E. M. FRY,
DAVID BUSH,
E. B. KENYON.

OPENING ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY ON THE FOURTEENTH DAY OF SEPTEMBER, EIGHTEEN HUNDRED AND SEVENTY.

By CHARLES F. REED, President.

Ladies and Gentlemen, and Members of the State Agricultural Society:

We have come together once more on this the day of California's industrial jubilee, to meet and greet each other with words of congratulation and good cheer. We have come once more from the valleys and mountains, from the cities and towns, to meet here as friends and co-workers in the great cause of social and industrial improvement. It has been my good fortune, on many occasions like the present, to address some of you in this same noble hall with words of salutation, and to extend to you, in behalf of the society, the hand of welcome and good fellowship. Permit me once more to repeat those salutations, and to congratulate you upon the favorable auspices under which California's Annual Fair for eighteen hundred and seventy is ushered in. Never before, since the organization of the society, has it been in so prosperous a condition as to-day.

Every dollar of indebtedness has been fully discharged, and the financial success of the society is placed beyond a peradventure. The number of active members is greater than at any former period, and the list is gradually increasing from year to year. The growing interest in the annual exhibitions of the society has rendered it necessary to build additional room for the accommodation of exhibitors at the Hall, and many improvements of a permanent character have also been made at the Park. Improvements by a State Agricultural Society like those we have this year been called upon to make are certainly indicative of the agricultural prosperity of the State, and when we reflect that our agriculture is but in its infancy, and that it has been built up upon the decline and decay of another once all-absorbing industry—mining—we may well be proud of its present prosperous and successful condition. But a few short years ago agriculture—legitimate, life-giving, nation-sustaining agriculture—was unknown in California.

Even California herself was to the balance of the world as a sealed book. Her mountainous regions as an unpenetrated wilderness—her broad plains as barren deserts—her bays, lakes, and rivers were unknown to commerce and their waters were undisturbed by man, except as the wild Indian's frail canoe, now and then, in silence lazily and aimlessly wafted its indolent owner upon their bosoms, not disturbing, but rather

forming a part of the universal solitude that then everywhere reigned. But a better and brighter day dawned. A few American citizens—some by accident and some moved by the true spirit of adventure—coming into and roaming over this country were enraptured with its majestic and beautiful scenery, and captivated by its salubrious and invigorating climate. Believing they had found the land of promise—the modern Eden—they settled in different localities and began in earnest to build them houses and raise them up households. Thus was planted here the seed of American enterprise and of American institutions.

These few pioneers knew not what they were doing; they knew not nor could they comprehend the great part they were acting in the important changes the country they had adopted was so soon to produce in the world. But with the certainty of fate, or destiny, or Providence—call it what you may—those changes came and came rapidly. They gave to the United States a territory equal to an Empire, a territory richer in precious metals than any other territory of equal extent the world had ever known, a territory which in the short space of twenty years has added to the wealth of the world—has increased the business capital of the nation over a thousand millions of dollars! This increased capital and wealth has given to mankind throughout the world new life, new energy, new enterprise, and new capacity for general business and improvement, both private and public. It has entered into and had its influence upon all the ramifications of society in all the civilized nations of the earth. It has opened the coffers of the rich, created new channels for labor, administered to the wants and increased comforts of the poor. It has projected and built thousands of miles of railroad and telegraph lines, both in the new and the old worlds. It has quickened international communications and increased international commerce by spanning the depths of the largest oceans with telegraphic cables and seaming the surface of the high seas with lines of magnificent ocean steamers. It has projected and consummated the two greatest enterprises ever undertaken by man by uniting the extremes of the western continent with an overland railroad, and those of the eastern by a steamship canal, thus creating two short competing routes for the travel and commerce around the world.

The admission of California in o the Union with her free Constitution and free territory was undoubtedly one of the principal initiative causes that brought about the Southern rebellion, and California gold in turn furnished the Government, in the hour of her peril, with much of the necessary means to crush the rebellion, and with it to banish from the earth American slavery—thus settling for all time to come the most troublesome question our fathers had to deal with in the organization of the Government and the most dangerous one that ever has threatened its continued prosperous existence. Viewed in this light, California furnishes a striking example of the powerful influence that a people intensely in earnest in the accomplishment only of their own purposes, and pursuit only of their own ends, may under Providence exert upon the destinies of the world.

Our State, as well as our people, is, in many respects, without a precedent or a parallel. She sprang at one bound from infancy to maturity. Without permission of the General Government, with no enabling Act, or territorial or other organization known to our laws, publishing to the world a Constitution expressive of the sentiments and will of her people, she knocked at the door of Congress for admission among the sisterhood of nations. After a short but desperate struggle, in which usage, pre-

cedents, and sectionalism were arrayed against necessity and our determined will, we triumphed, and but twenty short years ago the ninth of the present month we date the commencement of our existence as a State.

Well may the California pioneers who took part in the events of those times delight to keep green the memory of that day! Well may they celebrate the anniversary of that day with bonfires and illuminations, with patriotic poems and orations!—for to them the ninth of September stands next in importance to the fourth of July. Well may they be proud to number among their members some of the first men and most distinguished officers in the nation, and well may they feel complimented when some of those officers travel over three thousand miles to join them in their celebration.

But we have remarked that a few short years ago agriculture was unknown in California. At the time of her admission as a State no one was found so wild as to imagine that she had any other value than for her mines. To-day, how different her position as an industrial State! Our mines, though still valuable, are among the least of our industrial resources, and agriculture is the great all-sustaining, all-enriching, and all-important industry. From the least, we have, in the short space of twenty years, grown to be one of the most important agricultural States of the nation. In the production of fruits, wines, wool, and silk, we undoubtedly stand the first in the Union. Our fruit list already embraces almost every variety known to the world. The hardier kinds grow to perfection in all portions of the State, from the northern and more mountainous regions to the warm tropical climes of the southern valleys. In those valleys, and in almost all the valleys of the State protected from the direct ocean winds and the sweep of the winds of the broad plains, all the tropical and semi-tropical varieties flourish and come to a degree of perfection not excelled in any of the fruit-producing islands of the tropical oceans. The eagerness with which our neighbors of the Atlantic slope seek the California fruits shipped across the continent, shows the superiority of those fruits over those of their own growth. When we shall have greater facilities and more perfect arrangements for shipping those fruits, with cheaper freights, as we will have in a few years, here is an opening for a trade that is destined to bring back to California no small portion of the gold that in former days was shipped out at the Golden Gate in payment for these very articles imported.

In this connection allow me to remark that there is no longer any excuse for permitting fruits of any kind to go to waste for want of a profitable market. If they cannot be marketed green, let them be dried, and there is a demand in the Eastern States for all that can be thus preserved, at highly remunerative prices. The variableness of our climate in different localities, if we choose to avail ourselves of the advantages thus offered by nature, will enable us to enjoy the luxury of green fruits the year round. Thus the same varieties of apples that ripen in the early Fall in the valleys, when grown at an elevation of fifteen hundred feet up the Sierra Nevadas, do not ripen until midwinter, and if grown at from six hundred to one thousand feet greater altitude, will keep well until our markets are bountifully supplied with the early varieties of the following Spring. This is no wild statement founded upon mere theory or conjecture, but its truth has been thoroughly demonstrated by actual fact.

It is also ascertained that the fruit produced at a high altitude on the

mountains is much finer grained and better flavored than that grown in the valleys, and, if possible, the orchards are more prolific. These facts must prove of great value to California as a fruit growing State, and those orchardists who first take advantage of them in a practical way will be doubly rewarded for their enterprise.

Though our Fair comes at a time when all the earlier varieties of fruit are gone, and though the display is but meagre compared to what our fruit growers might and ought to have made it, yet we may without fear challenge any other country in the world to excel or equal it. A careful examination of the exhibition of fruit before us will fully prove the strict correctness of the statement we have made in regard to the climatic and other advantages possessed by California as a fruit growing country. Our wine product this year will probably exceed twenty million gallons. Our vineyards are steadily growing in numbers and capacity, and with the age of the vine the wines are steadily improving in quality. Those varieties of table grapes that will bear transportation are selling for home consumption and shipment East at highly remunerative prices, and California as a wine growing country is steadily making a good reputation for herself.

The greatest drawback to her complete success in this industry is the want of uniformity and system in the selection and assortment of the grapes and in the treatment of the wines. Thus, instead of producing a few choice and standard varieties of wines—such as would always be in demand at the highest rates the world over, we have been and are still pursuing the suicidal course of placing upon the markets wines of as many different shades of taste as there are different vineyards in the State.

Again, our wine dealers, in order to produce some degree of uniformity out of this great variety of wines, have taken up the practice of mixing and *doctoring* them so as to give the mixture some of the characteristics of the better brands, for which they pass them off. This is all wrong, and a great detriment to the character of the California wines generally, and especially so to the wines of the best makers. It is of the highest importance to our State, and to the wine makers themselves, that these evils should be corrected.

This object could be accomplished if capitalists and enterprising men would establish wine cellars in the different wine growing districts, and buying up the grapes from the producer, and assorting them with reference to their peculiar wine qualities, would submit them to such uniform treatment as science and good judgment might dictate. Capital could not find a better investment nor enterprise a more certain reward than is here offered. In the absence of such facilities the producers themselves would find it greatly to their advantage to associate together and manufacture all the wines of large districts at one common cellar and under one common management. We commend this subject to the serious consideration of our wine makers, and to men of capital and enterprise.

The magnificent exhibition of fruits, grapes, and wines from our mountain counties, the old mining districts, is worthy of more than a passing remark, and it warrants a more particular notice of some of the advantages of those districts.

Some of the best and most extensive and productive vineyards and orchards in the State are to be found in those localities. Without desiring to make any unpleasant distinctions, but only with a view of illustration, we would mention those of Nickerson, of Placer, Marshall, of

Nevada, Bugbey, of Sacramento, and Chalmers, Dickson, Brooks, Carpenter, Weatherwax, and others, of El Dorado. The establishments of each of these gentlemen, comprising as they do, extensive and highly cultivated and productive vineyards and orchards, together with commodious and well appointed wine cellars and other buildings, and all the paraphernalia of prosperous mountain farms, may well be pointed out as worthy of the pride of any State. They are really a credit to California, and each is to its enterprising proprietors a valuable fortune. Here and there, scattered through the foothills, are many other smaller but prosperous vineyards and orchards, but these are named as examples. And in this connection allow me to state a fact that is not generally realized even by those supposed to be well informed. There is on the western slope of the Sierra Nevadas, a strip of country about twenty miles wide by over one hundred long, in which there may be selected hundreds of thousands of farms, equally favorable as to location, soil, climate, and all the other natural requisites as are the farms above named. All that is wanted to make these new locations as prolific, as beautiful and valuable as those referred to, is the same amount of money, skill, and labor bestowed upon them that these men have bestowed upon their valuable homes. I will say further that a very large portion of all this land has been surveyed, and can be bought of the Government and the railroad company for from one dollar and a quarter to two dollars and a half per acre. Here are homes for the million, and those who under such circumstances remain long without homesteads are without excuse.

Our wool clip the last year was a little over fifteen million pounds, while this year it will exceed twenty million. Never before did our wool bear so good a reputation or bring so high a price in the markets as at present. By the cultivation of alfalfa or Chile clover upon our sheep ranges the number of sheep may be greatly increased on the same area of ground and the quantity enhanced and quality improved. Silk culture is being entered into in all parts of the State, and bids fair at no distant day to become one of our most important industries. It is estimated that there are now in this State two million five hundred thousand mulberry trees, and the number will be greatly augmented during the next Winter. During the past year a silk manufacturing company, with abundant capital, has been organized in San Francisco, and buildings for the factory are nearly completed. This will stimulate the industry by furnishing constant home market for the product, the want of which has been a serious drawback to it heretofore.

It would give me great pleasure to go through the list of our agricultural products and show the rapid increase in each from year to year, but space and time allowed in an opening address will not permit. The whole subject of agriculture will be so thoroughly discussed by the able speakers that are to address you from this stand during the week, that it seems unnecessary for me to claim your attention longer.

I feel called upon, however, briefly to refer to a subject which at the present time is of greater interest to California and all her producing and industrial classes than any other. It is an evil which more than all others discourages and defeats California energy and enterprise, and disheartens and opposes California industry and labor. I refer to the exorbitant and unwarranted demands of capitalists for the use of money.

In earlier days, when mining was the leading industry of the State and gold its only product and export—all the necessaries of life being imported—when men with pick, shovel, and rocker, could take from the

earth from ten to fifteen dollars a day each—when the merchant could realize from fifty to two hundred per cent profit every time he turned his capital over, and money was worth from sixty to one hundred per cent per annum, all seemed to go harmoniously on, for then we had no formidable competitor in our great and only staple export, and the favors of fortune were so fickle and uncertain that none of the rules that generally regulate the relations of capital, enterprise, and labor, seemed applicable to us.

Since that time changes have been gradually taking place in our whole industrial system and in our relations to and with the outer world. The product of the mines has been gradually falling off, and enterprise and labor have been seeking other channels of occupation. The facilities of travel and commerce and general intercommunication between our State and other countries have been gradually increasing, until with the completion of the overland railroad the revolution is thorough and complete. To-day our great staple products are those of agriculture and manufactures, and wherever, in whatever country, whether at home or abroad, on the eastern or western continent, those products seek a market, then they meet face to face and come in sharp competition with similar products from other portions of the world.

Our wheat has to compete with wheat from South America, the Atlantic States, Russia, the Mediterranean, and all other wheat growing countries. Our wines find competitors in the wines of Germany, France, Italy, Spain, and Portugal. Our wool comes in contact principally with the wools of the Eastern States, Europe, and Australia, while our silks have to make their way against the old silk growing countries of Southern Europe and Asia; and our manufactures have to combat the manufacturing capital, facilities, and skill of the Eastern States and England.

Thus, nothing we now produce, nothing we now manufacture, can find a market except against the ever present and ever pressing competition of the world.

What then, I ask, must be the necessary conditions of prosperity and success to our agriculture, our manufactures, and our commerce?

Our natural advantages for these great industries are not excelled by any other country in the world. We have a soil and climate unsurpassed, our manufacturing facilities are equal to those of any other country, and our location is in the direct path of the commerce of the world. The skill and energy of our people is proverbial. Then what more do we want to prosper, to excel? My answer is: cheap capital and cheap labor.

Give us the former and the latter will follow, for whenever there is energy and enterprise in a country, and plenty of money at low rates of interest, then all the necessary expenses of living will be cheap, and labor will find constant employment and will be readily and cheaply obtained. Capital in all ages and in all countries is proverbially timid and slow to move, and in this State it seems willfully and stupidly blind to the changes and improvements that a few years have brought about. What reason or sense is there that enterprise and industry in California should be taxed for the use of capital from twelve to eighteen per cent, while the same capital in Europe and the Atlantic States or any other portion of the world cannot command but from three to six per cent with the same classes of security? None whatever. And yet such is the stubborn fact. And in this fact, above all others, lies the greatest impediment to California's rapid settlement—to the development of her

boundless resources, and to her upward and onward march to permanent and substantial success and universal prosperity.

Ladies and gentlemen, permit me to say to you who have not yet visited the Park that the exhibition of fine stock of all kinds has never been equaled in California, if in any other State. The exhibition here in this hall is before you. It speaks for itself. With one third additional space to our old building we have all full, and it would do credit to any country. It gives me great pleasure again to congratulate you upon the favorable auspices under which the Fair for eighteen hundred and seventy is ushered in. I bid you welcome to all its enjoyments and to all its sources of study and improvement.

ANNUAL ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER SIXTEENTH, EIGHTEEN HUNDRED AND SEVENTY.

By Hon. A. A. SARGENT.

Mr. President, Ladies and Gentlemen:

I congratulate you upon this annual gathering, this magnificent display, these evidences of prosperity of your society and of the State. No one who has lived in California for years past, with but brief periods of absence, can appreciate the effect produced upon the eastern visitor or upon the Californian who has passed a year or more away, by first impressions, or fresh ones, of our State. Whatever is lovely in climate, magnificent in scenery, beautiful in flower, or exuberant in fruit, however familiar to the constant resident, to the visitor or returned wanderer is novel and enchanting. A few weeks ago I passed through nearly every State of the Atlantic seaboard, and thence westwardly from ocean to ocean. Through all the region which I traversed there was dust and drought, cloudless skies and suffering earth. East of the Sierras the crops were burnt up, the grass wilted by the wayside, and men looked up to the unpitying heavens and longed for the rains so untimely withheld. It may be that such a spectacle prepares for a more full appreciation of the advantages and excellences of this State. The traveler arriving here finds first the evergreens of the Sierra crowning with life the granite peaks and doubly refreshing after the wide spaces he has traversed of sage and desert. In these broad valleys in midsummer he finds the dust and drought that accompanied a blasted harvest in the east, but not here the sign of destruction. The golden harvest is gathered in, and the luscious fruits of Autumn astonish by their profusion and perfection. He left sultry days, where exposure to the sun might bring paralyzed imbecility or swift death, succeeded by steamy nights in which unrest turns heavily after the labors of the day, and gains no refreshment. Here he finds certainly an ardent mid-day sun that may kiss eagerly but not treacherously, and refreshing nights that repair the toils of the day by sweetest sleep. If he is an agriculturist he hears with astonishment of the yield per acre of cereals—stories that revive traditions of the Genessee, but are nowhere now paralleled. He may hear of partial failure of crops, but so broad is the State that universal failure never occurs. From foothill to valley, wherever he looks, he

finds the bounties of nature prodigally displayed, as if this far west bordering the sea had been chosen out as the favored of Providence for the sunniest blessings and happiest destiny.

Compared with many of the Territories that have grown into noble States, and still keep steadily on in growth and influence, California, in location, climate, productiveness, in all natural advantages, is far superior. Yet in population we are nearly stationary. Bleak Minnesota outstrips us day by day. Iowa has five times our population. Our census to-day will not reveal over six hundred thousand souls in the State. It would have shown nearly that number in eighteen hundred and sixty if it had been carefully taken. I fear the present census does not do us justice; but it approximates closer to accuracy than that of eighteen hundred and sixty. Why are we not sharing more largely in the fertilizing tides of European immigration? Why do not colonies of thrifty Germans and Swedes nestle in our valleys, or develop the large capacity of our foothills for the vine, for silk, and wool? The mountain valleys and all the lands on and near the Coast Range are admirably adapted to grazing. Yet, so inadequate was our dairy farming last year that we imported from the East one million dollars worth of butter. Chicago sent to us eggs. New York and Oregon sent dried fruit, though millions of pounds of finer fruit than New York can produce under glass rotted under our trees. With the Muscat of Alexandria grapes in abundance, we now import raisins. We make good candles, but we buy more, as well as soap, and even cranberries. Oregon sugar-cures hams for us. The East furnishes us with much of our furniture. I need not add to such a list. The showing is better than formerly; but we do not yet improve our opportunities. For all these articles, as well as in stock and sheep raising, in special industries, as silk culture and beet sugar production, California should be unrivaled. With such advantages our State scarcely increases with the years. The railroad spans the continent, competing with the steamers in furnishing cheap transportation to immigrants, yet the State gains little in population, while its business men lose by competition with more frugal dealers to the eastward. Yonder plains should be covered with flocks of the choicest sheep, and our hills with the finest cattle. Our wool clip should supply the world even more certainly than our wheat. Yet what aid has legislation ever given to this end, or is even afforded by enlightened societies like this. Compare the speed programmes of agricultural fairs with the premiums for choice cashmere goats or Ayrshire or Alderney calves! We must know our faults as a community in order to correct them. There must be some cause for this tardiness of movement of population hitherward, which these industrial societies must discover and endeavor to correct, or we shall find ourselves left far in the distance by our sister communities. We certainly are not satisfied to wait until all the more eastern States have become full hives to swarm upon us. Several generations will elapse before that can take place. With superior attractions we should take the lead of them, and make the Pacific coast an empire of wealth and power.

As I am not a practical agriculturist, you will not expect a dissertation on modes of improving stock, on fertilizers, or agricultural chemistry. But a few observations may be acceptable upon the question so interesting to every farmer and to every business man of the State: Why does not California, with all its attractiveness and productiveness, grow more rapidly in population and development?

The first, and to my mind the strongest reason, is the difficulty of

acquiring lands cheaply in this State. Years ago, before Americans possessed this El Dorado, the Spaniard obtained grants of all the lands fanned by the sea breezes, where, the lord of vast tracts, he lived lazily, surrounded by herds and dependents. When his possessions were afterwards confirmed to him or to speculators who fleeced him, these great grants remained, and many remain, in very few hands, held at large rates per acre, and forbidding close settlement and improvement. To supplement this system came fraudulent land grants, absorbing whole counties, and often confirmed. California would be millions of dollars richer to-day had not the Mexican system of colonization been practiced in it, provided the valleys and hillsides subjected to Mexican grants had not been open to the second curse of our land system—that of private entry. By this latter device millions of acres of public lands, such lands as in Iowa and Minnesota sustain hundreds of thousands of farmers, became the property of a few holders. I do not cavil at the speculators who took advantage of ill-judged laws to add mile on mile to individual possessions, and who now hold their cheaply acquired counties at high prices per acre. I only lament the system that gave the opening for such speculation, and try to suggest a remedy. In some of the valleys of this State a rider with fleet horses may ride all day on one man's land, acquired for scrip or greenbacks at depreciated rates. Not a fence or plowed field will interrupt that race against time. All is virgin, but desolate. From neighboring mountains a copious crystal stream rushes down, that could be carried over all these broad tracts, and redeem to fertility the barren square miles lying useless in the sun. But no industry is at work. The speculator awaits a rise. He does not improve, he speculates. To a settler the sight might not be forbidding could he purchase at near the price that the government fixes for its lands. But he turns away where fifteen or twenty dollars per acre are charged and goes back to bleak Minnesota, where the Winters may be cold, but land is cheap. Agents looking for land for colonies are thus repelled. Is it any wonder that our State does not increase in population?

This absorption of vast tracts of valuable lands in a few hands is contrary to the spirit of our land laws and the genius of our institutions. It is effected under color of a law that offers to any purchaser the chance to buy waste lands which, after reasonable opportunity for preemption and offer at public auction, are not taken. But the laws design that settlers shall have ample opportunity first, and that lands shall not go to private entry until the country is developed about them and they are still refused. This was the principle of the great preëmption Act of September, eighteen hundred and forty-one, which has disseminated blessings throughout the country. Our legislators at that period were actuated by a noble spirit of liberality both to aliens and natives, not forgetting the rights of women. That Act has done more toward the promotion of settlements in the vast regions of the northwest, and in the development of their agricultural resources and interests, than all other causes combined. Thousands and thousands of indigent families have been enabled under it to obtain comfortable homes, and by means of these settlements our western wilds have been subdued into civilization and covered by the farms of a prosperous and happy people. But in most of the fertile valleys of this State we have been totally deprived of its benefits by a hasty system of surveys and offering of land. These lands are as effectually locked up to the indigent emigrant as are the deer parks and rabbit pastures of the English lord.

One remedy for this condition of things is partial, but less satisfactory

the longer delayed. Congress should pass a law dedicating all the remaining lands of California to homestead and preëmption entry only. This would save all lands not yet absorbed, and prevent the future offering of lands. But the effective remedy is in the hands of the Legislature, and I suggest it with deference. A heavy land tax, rigidly enforced, would make unimproved lands held for speculation cheaper, and tend to break up the great tracts that now exclude settlement. This is not agrarian or unjust. The theory of all property taxes is that they are assessed upon the actual value of the property. If the landholder will not sell his unimproved lands for less than a certain price per acre, that price should be assessed as the value of the land. The remedy is gentle; the evil to be corrected is enormous. What greater curse can the State suffer than to have diverted from it the tides of population that would make its valleys rejoice and its waste places to blossom as the rose? No one can doubt that our population to-day would reach one million if every foot of land in the State at its birth had been Government land, and sold to actual settlers only at one dollar and twenty-five cents per acre.

Such Congressional legislation as I have suggested has already been adopted by the House of Representatives; and a bill became a law at the session just closed, which provides that lands subject to private entry, withdrawn for railroad purposes and subsequently restored, shall not by such restoration become again subject to private entry, but shall be open to homestead and preëmption only.

The importance of these considerations to the prosperity of the State will be seen by one simple statement: out of about twenty millions acres of public lands disposed of in this State, exclusive of grants in aid of railroads, only a little over two millions have been sold to actual settlers or conferred on them under the Homestead Act. Scarcely more than a tenth of the lands patented by the Government within our borders during the twenty years of our State existence has gone to actual settlers. Nine tenths are held by large owners or have been peddled out at ruinous prices to those who would buy. Am I not right, then, in saying that a principal reason for the slow growth in our population is the difficulty of obtaining cheap lands in this State?

There are other difficulties in our anomalous land system which this may not be the place to dwell upon. The Sierras behind you are feathered with magnificent pines and oaks. From them largely you draw the lumber for your fences, for your dwellings, perhaps the fuel that warms you in Winter. Yet not a tree can be lawfully cut down on Government lands, and there is no way in which the title can be obtained to the lands from the Government. In those frosty altitudes settlement and preëmption are impossible. The great industries pursued there, resembling those of the piney woods of Maine, should be legalized by legislation, and some cheap method devised by which title to the lands may be obtained. The miner, working by the side of the lumberman, has now an opportunity to make his claim his home, and will I trust cease to be nomadic and become settled and contented, adding to the stability and prosperity of the State.

While much may be achieved by legislation in repairing the errors of the past, and laying the foundation of a future prosperity, there are errors of practice of the present beyond its reach. Our business men are learning a rude lesson from the new contact with eastern competition. They are discovering the necessity of economy and retrenchment. Have not our farmers that lesson to learn also? Have they not

more to learn, viz: that a farming community does not do wisely that seeks chances of sudden wealth by over production of some one article instead of diversifying its products and relying on smaller gains? I have called attention to the fact that one million dollars worth of butter per year is imported into this State. Where are our dairy farmers? Are they not all wearing out their lands to raise wheat to come in competition with all their neighbors, and make or lose as a bad or good crop in Europe opens a foreign market? Our broad acres sheared by machinery tempt to large farms and the cultivation of cereals. Would it not be better to reduce the size of many farms and diversify the productions? There is no reason why home-made butter should not expel every pound of the imported article. Here you need not feed or shelter your stock during Winter even. In the other States the stock must be fed and sheltered nearly half the year. The cost of production should be so much less here that California should ship its butter and cheese successfully by the railroad or Isthmus instead of importing it. But this may not be hoped while our farmers see wealth only in wheat, and neglect the diversified interests that make up agricultural industry elsewhere.

The most vigorous protests have been entered of late by agricultural authorities against the extensive and exhausting production of wheat that characterizes California and some of the Western States. We are assured that our soil is being rapidly and hopelessly exhausted. The elements that go to make this cereal are the most precious constituents of our soil. To raise twenty-five bushels of wheat on an acre strains the capacity of that acre, and renders it less able to produce unless recruited with appropriate plant food. Our rich new land—rich in lime and potassa, in the nitrates and phosphates—produces more abundantly, but every crop weakens the soil. For a few years the strong inducements to sow a great breath of the productive soil, aided by implements of modern agriculture, may make the farmer overlook the consequences. But he is only eating out his fresh and fertile soil, and wasting the heritage of his children. The riches of our lands are drained to pour their affluence into the sewers of London and Paris. Were I a practical farmer I would press these facts and considerations with all my force upon your attention. As it is, I point to your best authorities who deprecate the enormous, unvarying production of wheat, and prophesy barrenness and desolation as a consequence. Is this the practical answer, "If so it is, we will get rich in the process—'after us the deluge?'" The answer might have been characteristic of California in the past; but now let us believe it has higher aims and principles.

Another drawback to our State is not the peculiar fault of our farmers—it pervades all classes. It is that extravagance of life and ideas, born of the flush days of the State, when the gold glittered among the grass roots and wealth came and vanished like a dream. It is amusingly illustrated by the affected reluctance of some Californians when first visiting the East to take small change, as unworthy their attention—an affectation that only makes them ridiculous. It is also illustrated by the exuberant, undiscriminating hospitality extended at first to all comers here from the East, and often bestowed upon mercenary adventurers or unappreciative selfishness. The frank openheartedness of Californians was abused and frequently rewarded with sneers. An instance occurs to me of a person who was feted about this State and Nevada, and treated with the utmost consideration and kindness, although he had no claim to such attentions except as one of a party of early visitors.

He paid his debt by denouncing his generous entertainers in a public speech as galloping to bankruptcy from their extravagance, and as having only selfish ends in view in their lavish hospitality. He is a type merely of his class, and we have been privileged to receive and worthily entertain many nobler men. We have now as our guest a Californian by association, one of the energetic founders of our State, illustrious for brilliant achievements in the field, one of the great Generals of the world, whose fame the future will never allow to die. To such, and to the great statesmen of our country of any party tempted to visit us by the completed road, our welcome may well be warm and appreciative. But the fault of our unusual and overflowing generosity is that it is to too great an extent undiscriminating, and is one of the evidences of a luxurious extravagance that new business competitions must correct, or we shall justify the prognostications of some of our guests and reach the bankruptcy they predicted. This extravagance, of which the illustrations given are mere casual evidences, leads us as individuals and communities to live up to or beyond our means, so that no fund is prepared for the future and wealth does not accumulate. A single bad year, causing a complete failure of his crops, is apt to plunge a farmer into distress, if not absolute bankruptcy. Under the influence of the prevailing habits the farmer is not satisfied with a living and slowly coming wealth, with a small farm; he must add field to field and cultivate a great space, often beyond his capital, and where failure is disastrous. Under their influence all classes rush into speculation and deal in articles and business of the most opposite character. A dry goods dealer speculates in wheat, a farmer in mines, a miner in fast horses. Each to his trade, moderately prosecuted, would gain a livelihood that would be considered prosperous in other States. Here he fails in all because he expands beyond his means and experience, deprives business of his legitimate exertions, and depresses the State by his failures.

Another cause for the slow growth of this State is the anomalous condition of its labor market. While wages are nominally higher here than anywhere else perhaps in the world, and it would seem that laborers, skilled and unskilled, would pour in here in vast numbers and set in motion every wheel of industry and develop every latent resource, in fact the influx of laboring men is very limited and the encouragement offered for their presence is very slight. It is not because we have not vast fields yet unshorn, fair as the sun looks upon; not because there are not a hundred branches of manufacturing and mechanical industry that need to be established or extended; not because remunerative mines for moderate expectations are not to be found. The State needs labor; is able to reward it; why does it not come hither? It is in a measure because the wages of labor here are only nominally higher than elsewhere. In reality they are lower. While the artisan or laborer is employed he obtains a high price for his labor. But if the weeks and months of idleness are counted, he gains less than his brother in the East. The rate of payment for the time employed is jealously insisted on, while the loss by want of occupation is overlooked. As many enterprises that would give steady employment to thousands fail or are not commenced under the present system, the artisan may ask himself if there is not some radical error in the dealings of labor and capital within his power to correct. To repair or build a ship in San Francisco costs at least twenty-five per cent more than in New York, while the cost of living on this coast is now cheaper. Is it strange that our shipwrights are unemployed, when all the commerce of the Pacific might be

tributary to them? If it is confessed that there is a general aim of workmen to do the least work for the most money, the reason is given why enterprise languishes and capital is dormant or removed from the State. Adopt this principle and Chicago will do our casting, New York build our ships, and repair them where possible, the East supply our manufactures, and the world combine against our prosperity. It is natural that there should be the same unwillingness on the part of labor to adapt itself to the new order of things as that which distinguishes employers. It is the necessary outgrowth of our isolated and prosperous past. There is need for all classes to recognize the inevitable, and bring alike their expenditures and their expectations down to the present capacity of the State. Outside pressure and home distress will force us to this in spite of ourselves if we do not divert the necessity; while there is an alternative of a better and more durable prosperity if we heed the obvious lessons of the present.

Many have seen a solution of the labor question in the employment of Chinese, who furnish a fair article of labor, skilled and unskilled, at which white men cannot subsist. This may be a temporary relief to capital, and may forward enterprises that else would halt indefinitely. But I am not able to concur in the opinion that the immigration in large numbers of this people is desirable. A slower growth of a community, with the elements in it only of Christian civilization, seems to me far preferable to rapid development by an alien, heathen population. Would not twenty-five stalwart German or Scandinavian emigrants, with their families, be better for the real interests of the State than the whole Chinese population of I street? If the object of society is merely to accumulate wealth in the hands of an upper class, and have the laborer the mudsill—if American civilization and republican institutions could coexist with such a theory and practice—then it might be well to crowd every avenue of labor with Asiatics, and rejoice in the cultivation of the last inch of soil, the working of the deepest mine, the guidance of every wheel of industry by the adroit Chinese to the exclusion of white labor. But while white laborers need employment, as they always will, while their families must live and their children be educated, while Europe offers to us every year hundreds of thousands of emigrants of cognate languages, religion, civilization, and hopes, it may be well to husband our undeveloped resources for the profitable employment of the future rather than exhaust them beyond the needs of the present. The census now being taken will show some remarkable facts in the movements of populations. The crowded Atlantic States have sent out their enterprising young men and women to the West in great numbers, while Europe has furnished its best populations to create new homes there. The national development during the past ten years has been enormous. Here, we have been stationary, our population probably diminishing, unless the decrease has been supplied by Chinese importations. Not so the West. A population easily resolving itself into the mass of American society, readily acquiring our language, honoring our institutions, worshiping our God, unexcelled in industry and skill, has spread like a flood over the broad Western prairies, fertilizing like the swellings of the sacred river. Cities have sprung up all over the land, tied together in every direction by lines of busy railways. There has been haste of development it is true. The stumps of the original forest are seen in the streets; the prairie mud is innocent of macadam. But there is life, and labor, and sure advancement, and contentment. There is the life and beauty of Christian civilization. The school house and the church nestle

among the cottages, or rise in grander proportions in the cities. Is not this development, which is natural in its order, and without limit of duration or capacity as long as this land is freer than Europe, and has that which Europe lacks, undeveloped resources open to the enterprise of the laborer, and lands untilled, asking him to accept them as a home; is not such sure and essentially American development better than that which could possibly be obtained by transporting the Asiatic on any terms to occupy those fields and exclude their prospective possessors? Take Iowa, a new and thriving Western State, built up by the means which I have indicated. Would it not be undesirable to see its population retrograde to the level of Chinese, however industrious the latter may be? I need not fill up such a picture; much beside industry is needed to make a desirable community in this land. Yet there is no practical difference in the result between the recession of an American community back to the level of Chinese and the displacing or anticipation of such a community by Chinese. In a few words, the growth of American and the influx of European population is developing our resources healthily and rapidly; and it is better for us and our posterity that these causes which have made us a great nation should have unimpeded sway.

But these considerations give no warrant for the appeals of shallow or artful demagogues, who would stir up the reckless or ignorant to murder or expel the Chinese, or make their presence here the theme of partisan declamation. I have no fear that the Chinese will greatly increase in numbers here or in the other States if stringent laws against the importation of coolies are passed. No political party desires to encourage their presence; no political economist would deny that the population of this country by races kindred to our own is to be desired in preference to it by those which are so incapable of assimilation. The remedy for whatever evils their presence entails will be found when the question is not made the hobby of party, but is dispassionately considered; and that remedy will not be found by erecting a Chinese wall around ourselves, not by suspending trade and treaties with China and Japan, and not in the torch, the bludgeon, or the pistol of the bully and assassin. I believe that the remedy for the presence itself of the Chinese is largely in the hands of these whose only resource is their labor; and that they should learn that excessive wages for little work prevents the employment of capital, and with it the employment of labor; or else drives the former, even against its will, to resort to any cheaper labor that offers.

While these are truths for the laborer to estimate, there are others for the capitalist as imperative. The safety and well being of society depends on the intelligence and comfort of the laboring classes. A rate of wages that starves the artisan's family, or prevents the education of his children, and does not enable the industrious worker to lay by of his savings for sickness or old age, is un-American, degrading and intolerable. Our institutions can only be perpetuated by the continued intelligence of all voters. The most numerous class of society will always be those who furnish the skill or muscle for the many revolving industries of civilization. They are the workers, and by their numbers, under our form of government, they are the ones who choose rulers and determine the destiny of the Republic. They cannot fulfill the duties of citizenship on the wages of peons or coolies. Their relation to the State demand of them education and virtue, which are only to be expected of those who have the means furnished by a fair share of the profits of

capital in exchange for their labor and skill to bring education, comfort, and advancement within their reach. This has been the American theory. Under it the industrial classes have developed men of inventive genius, ranking among the most eminent of the industrial benefactors of mankind, and furnished constant improvements in every branch of mechanics. It has fostered independence of labor; it has prevented class distinctions; it has made ambition and elevation the right of every one; it has been the parent of virtue, intelligence, and patriotism; it cannot be superseded and this country remain a Republic, where rights and benefits are reciprocal.

I am not of those who believe that the stagnation of business here has been caused by our use of a metallic currency. Were it so business should have revived rapidly as gold and greenbacks came to equality in value. We have escaped the fluctuations that alternately excited and depressed business in the East, and changed values so rapidly that no fortune was stable. Except so far as our gold may have been shipped to speculate in the gambling operations of the New York money markets, we have been saved from the losses entailed by a depreciating currency, inevitably followed at last by depreciating property. But the speculations of the gold room have not been more excited and unreasoning than many of those which for years have captivated our people, and drained us dry of our wealth. This State seems to have overlooked the necessity of developing its own imperial mineral resources to invest millions in every distant bubble that folly or fraud flashed before the public eye. What untold wealth our people have buried in Mexico! How many productive mines would have been opened at home; how many farms made fertile out of waste lands, with the labor and cost of Fraser River! With recent White Pine it is too soon to say that our people have learned to resist such excitements; but it is indisputable that the legitimate business of the State will languish, and its growth in wealth and population be retarded until such unhealthy excitements lose their power over our people.

There are causes beyond our control which have injured the growth of our State. Surface mines that yielded largely are worked out. Partial droughts have injured our harvests. We have helped to populate neighboring States and Territories. But the causes I have named are the results of our own improvidence, recklessness, and cupidity. We may make the next decade tell a different story, or we may still lag behind our younger sisters in the Union in growth and prosperity.

It is gratifying to know that our great resources are unimpaired, that our land is fertile as Eden, our opportunities unexcelled. We have at our feet all the elements of a grand empire. We have but to build with the materials shaped to our hands. Our climate and soil are varied infinitely, and produce in perfection whatever elsewhere is a specialty. Need I so say with this display around us? Here is the lavish abundance of cultivated nature—the fruits and flowers of this productive soil and genial clime. Our State will produce cereals and vegetables of every kind, fruit of every variety including those of the tropics—the orange as well as the apple; the date and fig as well as plum and peach; the grape for raisins and wine; the mulberry for silks; even the tea and coffee that we use; the finest wool in the world; coal, and granite, and timber; horses, and sheep, and cattle in perfection; and all this makes the future of the State to the agriculturist full of encouragement. Here is but the

dawn of a golden future, where true prosperity will be founded on the sure basis of exhaustless agricultural resources, by patient, intelligent industry. But each decade shows that in the United States, notwithstanding the abundance and cheapness of virgin soil, the advantages of climate, the increased facilities for transportation to available markets, and the independent condition of our farmers and planters, that the ratio of increase of agricultural products of the United States is in general far below that of the increment of population, accession of territory, extension of commerce, manufactures, internal improvements, and the modern appliances for economizing labor. The first employment of man in a new State is the cultivation of the soil, save in exceptional cases. As population multiplies, industries become diversified. Providence so orders it, that the cultivation of a small part comparatively of the earth's surface will sustain its inhabitants, and so gives opportunity for the multiplied employments that characterize civilization. Hence, as communities increase in density and prosperity, numbers resort to the arts, to manufactures, to mining, and other useful pursuits. As these industries multiply, the demand for the produce of the earth annually increases; and to meet this demand a corresponding tillage and application of labor to the soil, guided by science, intelligence, and modern improvement, necessarily follows. Therefore, while agriculture is the basis of all prosperity of the State, it is itself dependent for its highest prosperity on the development of other interests to furnish profitable markets. In this view it is a matter of congratulation that the manufacturing interests of this State have vindicated their ability to live and compete with their foreign rivals, and that some of them have even commenced to make their way in eastern markets. Our woolen mills, our great boot and shoe factories, our sugar refining, our manufactures of wooden ware, cordage, leather, carriages, iron, etc., are all tributary to the agricultural interest, in the most profitable form. The resources of the State in this direction are beyond estimate, with all Asia and Central and South America for a market.

Our mines of precious metals, especially heavy placer washings, are little understood and appreciated as a source of permanent wealth. The light placers have been exhausted. They gave sudden wealth to a fleeting population, which had not the skill or energy to discover or work the great gravel deposits laid ages ago in the deep beds of ancient streams, and which are now hidden by later-formed hills and cut through by more recent streams. Hundreds of feet below the roots of hoary trees the gold store reposes, requiring patience and energy to find and develop it. But it is the result of my observation in the mines that the great placer deposits of this State are scarcely scratched after twenty years of mining, and will not be worked out for ages. Here, as in every other business and profession, experience and skill are needed for success. Most of the failures in mining have arisen from the running of useless tunnels in the wrong places, where intelligent miners would not risk a dollar. Many of them have been occasioned by extravagant expenditures by men who never saw a mine until called to superintend the opening or working of one. *Ne sutor ultra crepidam.* Such work should be left to miners. For the development of this great interest cheap and abundant water is needed. Capital judiciously expended in mining and furnishing water facilities could not fail of reward. Not one sixth of the available water of the mountains is diverted to the use of the mining communities. Yet, if you ask the inhabitants of any of those counties what is needed to develop the deep mines profitably, and

irrigate the orchards and gardens, to make their region again thriving and populous, and he will say, "It is water." Many of these observations apply to quartz mining, which is and will be for generations a profitable pursuit of the State. Thus the great industry that gave the first impulse to the settlement of the State is yet one of its most deserving and promising interests, and must not be omitted or underrated in calculating its resources.

Sitting within the unfolded doors of the Golden Gate, our commerce should bring to us tribute from the opulent East, and direct to us that vast trade which flows in currents as naturally as rivers run to the sea, wherever it flows depositing riches. Our ships were driven from the ocean partially by English cruisers, but kept from it by the impossibility of competition in the foreign carrying trade with the heavy taxation necessary to the late war and the reëstablishment of public credit. The extraordinary expenses of war are happily over, and a partial reduction of the debt, demonstrating that the nation can, if it pleases, extinguish it, has so firmly founded the national credit that only a few partisans advocate repudiation. With this condition of things Congress felt able to add a lengthy free list to the tariff, to reduce the duties on a multitude of articles, to abolish all internal revenue taxes except on spirits and tobacco, and a modified income tax, which ought also to be, and I think will be soon, abolished. The reductions to take effect during the next year amount in round numbers to eighty millions of dollars. With this burden off the industry of the country we can build and sail ships more cheaply than at any period during the past eight years, and I trust we may soon see American commerce prosecuted in American bottoms, and that we may do a part of the carrying trade of the world. Everything that aids foreign commerce builds up our city by the sea, and so far furnishes a market for our products. But I do not think that that object is obtained by a license to buy ships abroad, or transfer foreign lines of mail steamers under our flag, leaving the organizations which own and manage them and absorb their profits, unchanged. Such a measure, coupled with another admitting duty free all articles that go into the manufacture of ships, with a corresponding bounty where the materials are of American production, might be the dictate of wise statesmanship. So inseparably woven together are all our interests, so much does the farmer, the miner, the merchant, and the manufacturer each depend on the other, and so much does the prosperity of each go to make a grand total for our noble State, that these observations may not be deemed misplaced on such an occasion as this when the products and interests of the whole State pass in review. We have reason for thankfulness that, despite the errors of the past and some slight depression of the present, the review is so favorable and the prospect for the future so bright.

Finally, my friends, I congratulate you that our continent is at peace; that we may work out our destiny undisturbed by moving armies, by carnage, famine, and fire. Our peaceful homes are not leveled by deadly missiles, our harvest fields are not trodden red in the blood of men and steeds, our young men and adults are not summoned to fight, our wives and sisters not left to weep. The horrible war that tramples France in the dust, and makes two great peoples contend in hate and suffer wounds beyond estimate, may be the legitimate contest between the aspiration for German unity and the resistance imposed by traditional

balance of power. Or it may arise from deeper causes—from race antipathies, or religious antagonisms. Whatever the causes of the frantic slaughter, let us rejoice that we are a united people, with united interests, and that no such desolation can overwhelm our fair land, or reverse the advancing hand on the dial that indicates our growth in Christian civilization.

ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY AT THE ANNUAL FAIR, SEPTEMBER EIGHTEENTH, EIGHTEEN HUNDRED AND SEVENTY.

By EZRA S. CARR, M. D., L. L. D., Professor of Agriculture, etc., in the University of California.

In coming before you to-day I feel that this should be for us not only a *festival*, but a day of thanksgiving; that it is our privilege to turn from the ghastly panorama of death unfolded in other lands—from harvests laid waste and homes made desolate—to these triumphs of industry. And because our own country has so lately passed through the same desolating fires we are the better able to appreciate by contrast the supreme blessings of peace.

These reunions of the "Soldiers of the Plow" are of far greater value than a careless observer would suppose. The State Fair is not only the *great industrial holiday*, the annual exhibition of our productiveness and skill, but it is the germinating ground of a thousand new ideas, and the grave of as many mistaken and erroneous ones. I think in this and and their social bearings, bringing hundreds of isolated communities into contact around the centre of a common interest and experience, lies their chief value. And I do not see why they are not as profitable to the trader, the capitalist, the political economist, and the schoolmaster, as they are to the farmer. There never has been a time when the best efforts of the willing hand and thinking brain were more imperiously demanded. Our flagging commerce, the agent of our industries, is having a breathing spell in which to ponder the philosophy of trade as well as its mutations. The capital of Europe is hiding itself as if in fear. It is a time when such words as labor, wealth, competition, and coöperation are apt to take new significations.

It is from sources like these voluntary associations of industry that the facts are to be gathered which shall lift these questions into the elevated regions of science.

In coming before you to-day and witnessing such proofs that you understand the value of agriculture, as the foundation of all other culture, of State and national prosperity, I feel that I would greatly prefer to play the part of listener. But as the army scout who goes before to report obstacles in the way of progress, the strength and force of the enemy, claims no fitness for generalship, so I, who do not own a foot of land, offer you some reflections upon *the needs of agriculture*, and especially upon the *needs of agricultural* communities, which I have gathered during

many years experience, East and West, as one of the pioneers of industrial education.

I might claim for myself as early and intimate an acquaintance with this pursuit as the sage of the New York *Tribune*, for I have plowed where plowing was anything but a pleasure ride over fields of flowers, and mowed among bowlders and Canada thistles, where every bushel of corn cost more patience and muscle than a shipload of California's grain. I could match Mr. Greeley's experience on the barren hills of New Hampshire with my own on the Manor of Rensselaer. I also know the hardness of farm work and its unattractiveness to the young; and yet, at the summit of life, where I can survey both the ground passed over and the way I have still to tread, I can say there is no calling as useful, or on the whole as pleasurable, and none which, rightly understood and followed, will call into so active exercise the whole range of human faculties.

I believe this is the testimony of the best minds in all ages, and the question has become one of vital importance to the nation: "How shall we educate our youth so that there shall be *more farmers* and more mechanics in the land, and how shall we raise these pursuits to the rank they deserve in the hierarchy of industries?" It is useless to eulogize callings whose votaries forsake them with every opportunity and whose children turn from them with disgust.

Congress might give every acre of the public domain to found agricultural and industrial colleges, making them not only *free*, but giving a bonus of public lands as a reward of attendance, and still their halls will remain empty, until the relations of labor to human nature are understood and carried into practice; until the farmer, out of his sense of privation, loss, failure, and onesidedness, shall resolve that his children be as carefully cultured as his fields, that they shall grow up in pleasant homes, and be laying up, if not dollars and cents, "capital for after pleasures of thought and memory."

Let us reason together about this business of agriculture, wherein it fails to meet the demands of human nature, and why, in *California especially*, we are looking to the lower class of foreigners for the permanent tillers of our soil, and the supports of our most important industries. It does not seem possible that the energizing, civilizing forces which pushed westward from New England, Virginia, and Carolina, displacing mighty forests by fields of waving grain, are so far spent that we must depend upon other lands for their renewal. It cannot be that the old spirit which planted the wilderness with homes of freemen has departed from us and left nothing but greed of wealth and love of show. And yet, how many of the so called liberally educated men of the country would be willing to look to a trade as a means of livelihood, and how many young lady graduates of our female seminaries and high schools are expecting to become farmers and mechanics' wives? We are beginning to see that there can be no healthy, living community without plenty of farmers and mechanics, that the factory and farm must be brought together, and that the *salvation*, not to say civilization, of California depends upon this.

The first thing which the European emigrant seek to possess is *land*. It makes no difference from what part of the country he comes; Irish, Welsh, Swede, or German, the sentiment has been wrought into every fibre of his mental and physical constitution that he is *nobody* without land. He sees in it the foundation of wealth, of all distinction, and family pride, and not until thoroughly Americanized does he come to

regard it a source of speculation. Something of this old fashioned sentiment came over in the May Flower, and got planted on the James River, but in our migrations across the continent has become sadly diluted. It certainly does not now, as then, distinguish the higher classes of society, and if at this day we look for a hearty, genuine love for the land, we shall find it among the humbler classes of emigrants, whose wants have taught them its real value.

The whole Valley of the Rock River in Wisconsin and Illinois is one of almost unequalled fertility, and within my own remembrance has been twice colonized, first by settlers from New York and New England, the crest of the wave which in receding peopled Michigan (and which today makes its moral and mental atmosphere almost identical with those States), and secondly by Germans and Scandinavians. The first came in and took up extensive tracts of land which they cropped year after year with wheat, burning their straw, and returning nothing to the soil. They cut down the spare timber of the openings, and the climate being then considered unfavorable for fruit growing, left nothing in its place. By the time their farms were well fenced, comfortable houses and barns erected, they discovered that the crops were not as heavy as formerly, there were more frequent droughts, more "chinch bugs;" many of the pioneers sold out and moved to Missouri, Kansas, and the Pacific Coast. Meanwhile the hardy Norwegian and German emigrants, who coming later, had taken up the less desirable sections of wild land, saving in European fashion every scrap of manure, planting trees and vines, and gathering more closely into communities and neighborhoods, have been able in many cases to buy out these improved American homesteads, until in some locations the entire nationality has been changed, *certainly not for the worse*, if the accumulated increase of population and the value of the land is considered. Wisconsin, Iowa, Minnesota, and more lately Missouri have gained immensely in gaining this home making element.

For whatever reason the love of country life, which has been a characteristic of our blood and race, has so greatly lessened then, *it is greatly to be deplored*. While the laboring millions of England stand in an almost menacing attitude before her few hundred landholders, and are forced to emigration as their only resource, our own youth voluntarily turn away from the modest secure gains of steady industry to the uncertainties of city life and the excitements of speculation.

How can we bring about a change in this respect and develop a higher sentiment for that which in older lands represents not only a certain amount of money, but social standing, leisure, and culture?

I believe the only way to do this is to educate our youth, boys and girls, into a respect for those pursuits, to provide *liberally for such education*, and to multiply in every possible way the social enjoyments and embellishments of rural life.

We must take the social nature of man into the account, and not expect our children, at the age when social attractions are the strongest, to dig and delve, and endure the privations which were common under a former condition of things. When I remember how often the growing boy was overworked, the short time he had for study and recreation, the disadvantages with which he entered cultivated society, I do not wonder that the farmer's son turns to other occupations; or that the ceaseless household cares of the farmer's wife, in homes where beauty has not softened the hard outlines of utility, homes without music, books, or flowers, should discourage and disgust her daughters.

Men have left the farm because the refinements of life, its higher

relations and enjoyments have been lost sight of, and because the demand for educated men in other callings has been greater than the supply. We must change all this. We must become less greedy of money, more craving of neighbors than of acres; we must apply the principles of coöperation in the purchase and use of machinery as a small beginning in the direction of social agriculture.

When capitalists abandon speculation and engage in promoting and diversifying industry; when farmers can purchase and own the lands they cultivate, and not till then will agriculture take the place it deserves in the scale of human activities. The time when all these fertile valleys and foothills are covered with happy homes need not be so far away. In southern California, Anaheim furnishes a good illustration of the advantages of social over isolated settlements. The rapid growth of such places as Vineland, New Jersey, proves that there is a genuine love for rural life in the community when it can be obtained without the loss of social privileges. And the growing tendency of city population toward suburban life, as shown in the formation of our numerous homestead associations, is another proof that nature is still consistent with herself.

Here horticulture, the *original fine art*, which weaves a web of beauty around the lowliest home, becomes the uniting link between city and country. The cultivation of a small garden spot, its harvest of pure and simple pleasures begets a longing for the wider fields and freer life of the farm. I rejoice in the almost universal evidence of this taste. To the stranger in California the clump of lilies blooming in mid winter by every cottage door, the flowering vines wreathed around porch and window, are a more irresistible attraction than the gold of her mines or the wealth of her commerce.

But no social organization, however perfect and attractive, will suffice to permanently elevate our industries. This can come only through education.

I am aware that there is a prejudice against "book farming," and that mother wit and plenty of manure are in older sections of the country considered the great essentials of successsful agriculture. That kind of farming has had its day, just as pans and rockers have had their day in mining. When you think that science is simply the record of experience in these matters, the history of experiments and of their results—when you think whether it would be gain or loss to have all the agricultural journals and manuals removed, all statistical information withheld, and the transmission of the most valuable knowledge this age is gaining left to tradition—you are prepared to estimate what science has done and is doing for us. Still more, my practical friend, go back to the implements which your great grandfather, who was "no fool, sir," hoed and harvested and "thrashed" with. Buy a little wheel and a big wheel, and a reel and loom and dye tub for your wife, and after using them faithfully for a year, come back and tell me what you think of the service which inventors of machinery and improvers of varieties of plants, and men sent out by our institutions and learned societies to find whatever new and precious thing can be impressed into man's service, have done for the world.

When I meet a mechanic who is inclined to depreciate the value of education, who points to "successful men" who have made their lucky hits without it, and who is inclined to follow his calling in a mindless, empirical way, realizing none of the relations of his pursuits to great material and social laws, I say: "My friend, all your interests are at the

mercy of others—of men who have built up vast fortunes, secured to themselves vast monopolies, made peace and war in spite of you, burdened you with taxation—because your *craft* is only *handicraft*. A wise foresight toward self-preservation will drive you to education, if all other motives fail."

It is true there has been a great gulf between the abstract and practical sides of agricultural science in past years, but this is being rapidly bridged over in our own country, and I propose to show you how much more extensively in those countries where agriculture is the most successful and its pursuit most signally honored.

You are aware that in Prussia the Government requires that every child be educated, assuming it to be the right and duty of the State to protect itself from ignorance as well as crime. She enjoys the enviable reputation of being first among nations in this respect. All Germany, Austria, and of late Russia, are following her example in educating their farmers and mechanics as well as their lawyers, doctors, and clergymen. To insure this they have established special schools, with every appliance of land, buildings, and apparatus, taking students from the higher classes of the public schools or otherwise, and training them for their pursuits as superintendents, overseers, or laborers. A description of one of these schools, which has served for a model for the rest of Europe, will suffice for all.

"The Royal Land and Forest Academy" of Wurtemburg is situated at Hohenheim, a few miles from Stuttgardt. You would find there a large farm adjoining a Government forest of five thousand acres (these practical Germans know the importance of taking care of and cultivating *forest trees*), of which some twenty acres are divided into one hundred plats used for experimental purposes, whereon questions pertaining to soils and their treatment, and methods of treatment of new plants, are tested. A botanical garden covering several acres exhibits all the varieties of plants which can be grown in that climate. There is a beet sugar factory, a brewery, a distillery, a starch factory, a vinegar factory, a malting and fruit growing establishment, a silkworm establishment, and machine shops where agricultural implements are manufactured—for here the best models for Germany are found. The studies are carried on in connection with actual practice in the field and forest, and embrace the general principles of agriculture, composition and quality of soils, special plant culture, *meadow culture*, grape, hop, and tobacco culture, fruit culture, vegetable culture, breeding of domestic animals in general, horses, cattle, sheep, and smaller animals; silk culture, bee culture, dairying and practical farm business. Parallel with this practical instruction there is carried along through the course of study, arithmetic and algebra, bookkeeping, a knowledge of the laws and principles of taxation, physics, general and agricultural chemistry, geology, vegetable physiology and zoölogy, veterinary science, and the study of foreign trees and their uses.

In the higher departments you will find the sons of the gentry fitting themselves for the general management of estates; ambitious young men of the middle class fitting themselves for stewards; lower down, the sons of peasants, between the ages of fourteen and eighteen, who wish to become familiar with the routine of farm work, and who spend three or four hours in study and the rest in actual labor.

Any one can have instruction in the special subjects taught. Besides,

there is a course of three weeks of public school vacation, *in which common school teachers are posted up in the general principles of agriculture*, an example I greatly wish we might imitate in this country.

Nor is this all, or even the greater part of what those enlightened Governments are doing for the promotion of agriculture. Scattered through various neighborhoods are what are called experimental stations, where from twelve to twenty acres are divided into small sections for experiments in fertilizers, rotation of crops, etc., with a chemical laboratory and professor attached; with accommodations for animals, that questions of breeding, feeding, fattening, etc., may be authoritatively settled.

What I have said of Prussia is also true of Austria. But Russia, of all European States, has in the last few years pushed her efforts in this direction to the grandest results, making a chain of agricultural schools from St. Petersburg to the Caucasus. In eighteen hundred and fifty-six the first of these was founded at Gorigoritz, and since then special schools have been established for special cultures, such as flax, silk, etc., according to the soil, climate, habits, and needs of the people. To the great academy of "Agriculture and Forestry," near Moscow, the Government makes an annual appropriation of one hundred thousand dollars. In Caucasia the tuition is not only made free, but small incomes are secured to the students, ranging from forty dollars for the first year to eighty dollars for the fourth and last.

What have we to show in comparison with all this? Until within a very few years there has been no State patronage of agriculture, except the little that could be accomplished by State societies organizing annual exhibitions and Fairs, which have been nearly or quite self-supporting.

The National Bureau, at Washington, restricted by inadequate appropriations and seriously interrupted by the war, has nevertheless steadily worked on in building up a vast repository of all useful information respecting agriculture in all its branches. This economic knowledge has been freely dispensed through its reports. It has gathered seeds and cuttings from every part of the globe, directed public attention to new objects, and has its corps of observers and reporters investigating the most important subjects of climates, soils, fertilizers, and destructive insects. Every farmer ought to feel the importance of a representation which will foster and sustain this long neglected branch of the public service, and to keep himself informed with regard to its work. It is all the more important because our system of agriculture, like our system of Government, must be developed according to new conditions, and not in a blind imitation of foreign models.

With the exception of efforts made in Michigan and one or two other States, the subject of agricultural education was practically ignored in this country until Congress, by the Act of July second, eighteen hundred and sixty-two, gave to each of the States the means of founding (*not of sustaining*) institutions having this for their object. The *object* of this grant was, without a doubt, *to make more farmers and mechanics*, and not, as I have heard it claimed, to educate the sons of farmers and mechanics. Were the latter all that was contemplated, it would be right to hitch an agricultural professor or two to some existing college—feeder of the professions, and take the income of the grant as a quid pro quo; but I know of no reason why Congress should educate your son more than your doctor's, but I do see a very good reason for establishing great manufactories of intelligent industry. This Congress has aimed

to do, and to its credit be it said, in the darkest hour of the struggle to preserve the national existence.

The amount of benefit which each State will receive depends entirely upon the intelligent administration of the fund thence derived, the good faith in which the spirit of the act is carried out, and the hearty coöperation of the people. The proceeds from the sale of the lands has not yet been sufficient to put any of the institutions founded upon or assisted by the grant in full working order. The Empire State having the largest representation got the lion's share, and had a citizen rich and public spirited enough to add to the endowment five hundred and fifty thousand dollars cash, thus relieving the necessity for an immediate sale of the lands, which, carefully selected and located under his supervision, now exceed in value two and a half millions of dollars!

Ezra Cornell has thus, with the help of the General Government, founded an institution where "any man can receive instruction in any study"—a college for the whole people. Where is the Ezra Cornell of the Pacific coast?

The State of California, accepting her share of the Nation's gift, has by a wise legislation made it the foundation of one of the colleges of the State University. The University completes the State educational system, and is the crown and summit of that noble edifice of free instruction which guaranties to every child the general culture and special training necessary to energize and economise, to lighten and enlighten all labor. This is as it should be, but it is not for the interest of California, it is not for the interest of her farmers and mechanics, that the matter should end here.

There are colleges enough for general culture; every denomination has its own, where the common legacy of literature and science is received through some of the many colored theological lenses, *and of whose graduates it is estimated that not more than one per cent ever fill your ranks.* West of the Rocky Mountains there was not one industrial college ready to take your children from the public or high school, so that every step may tell upon their life business, and at the same time show them its wide relation to other pursuits and to the public welfare thus fitting them for citizenship. Nor was there *until October third, eighteen hundred and seventy*, a single school, or college, or university adapted for the suitable training of *farmers or mechanics' wives.* I am ashamed that in matters of education we have so long behaved as if it were better for man to be alone in his higher life, condemning him to an intellectual celibacy.

Perhaps this accounts for the unproductiveness and unprofitableness of so much of his work, but from whatever other walk of life we may exclude woman, she is as indispensable to the last as she was to the first farmer. And if ever toil and care lose their wrinkles and labor is ennobled and sanctified, it will be through her help and ministry; nor will the higher education ever be complete until the science of housewifery is as thoroughly taught as the science of husbandry.

The University of California proposes to furnish all the youth of the State with a theoretical education *leading towards industrial pursuits*, and to exhibit the practical applications of science to the culture of our varied products, the development of our mineral wealth, and our manufactures. It makes this education forever free, and admits young women to all its general and special advantages. Its competitive scholarships are open to all.

In organizing the University our Regents have followed the highest standards and Americanized the best models, but to carry on their work and realize their designs they must have the hearty and intelligent coöperation of the people.

It is proposed to gather at the University, at convenient seasons, those interested in special cultures for mutual instruction and encouragement, a work as indispensable as that accomplished by Teachers' Institutes for the public schools.

It proposes to furnish the facilities for all needful experiments; to be the "station" where tests can be made of whatever claims attention; to become the exponent and repository of our progressive knowledge. It will possess a complete collection of models in machinery, of seeds and woods, and textile materials. Its gardens and orchards, formed for instruction, will become a museum of pomology and horticulture, so classified and arranged that it may be read by all. In short, it will be the volume wherein the gifts of a beneficent Creator to this land and people have each their appropriate pages, and every letter a type of beauty, having more than a *material* significance.

Our climate makes the naturalization of every product useful to man possible, at least for purposes of instruction and experiment, for the history of our fruit culture makes us modest in saying what man may not do under these favoring conditions of climate and soil. Nor can I believe that the farmers of California will permit their homoculture to fall below their horticulture in excellence.

I have spoken thus freely and plainly of what the University hopes to accomplish, because it *belongs to the people*. You hold in trust the Nation's gift; you have generously added another which will greatly increase its resources. Our schools are the high water mark of our civilization; this school must necessarily be the high water mark of your appreciation, *as a class*, of the value of industrial education.

If the people determine that their children shall be put in full possession of all their faculties, because they need the full power of manhood and womanhood as much in one pursuit as in another, it will be done. If the people see in the public school the only place where the foreign elements which now enter into our political body can be digested and assimilated and Americanized, they will jealously guard and generously supply every department of public education. We have taught Europe to respect popular government, let us accept her teaching in whatever she excels. She has been pouring a flood of emigration upon us and compensating herself with the flower of our youth to whom she could offer superior advantages of education, with our scholars and capitalists to whom she offers the accumulations of centuries of culture, where money has not been the *only* object of pursuit, and men are content with slower and more moderate fortunes.

It is not extravagant to place agriculture at the head of industrial callings. It holds that place in the oldest Scriptures, the oldest literature and mythology. "Human history opens neither in forests nor in cities, but in a garden which the Lord God planted." As long as men must live by bread the hills and valleys must wave with the wealth of harvests, and multitudes be busied in the achievements of peaceful labor. How to dignify this labor with knowledge, and enrich it with thought, and beautify it with contentment, is a great problem. As the art of life is learned it will be found that man cannot live by bread alone—beauty

and sympathy are also the bread of humanity. And the time is surely not very far off when the measure of *service* will be the measure of human greatness.

"Give fools their gold and knaves their power,
Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
Or plants a tree, is more than all.

"For he who blesses most is blest,
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth."

SPEED PROGRAMME, 1870.

MONDAY, SEPTEMBER 12th.

FIRST RACE.

Trotting Race.—Mile heats; three in five; free for all stallions; purse—four hundred dollars; first horse, three hundred dollars; second, one hundred dollars.

Entries.

1. James L. Eoff, Colusa, enters blk. s. Blackbird.
2. John McDonald, San Francisco, enters br. s. F. F. Low.
3. H. Walch, San Francisco, enters s. s. Venture.
4. John Mackey, Sonoma, enters s. Alexander.
5. Charles Shear, Yolo county, enters s. Primus.

Result.

Blackbird	3	4	4	2	1	1	1
F. F. Low	1	1	2	3	2	2	2
Venture	2	2	3	4	drawn.		
Alexander	4	3	1	1	3	dis.	
Primus	drawn.						

Time—2:34¾; 2:36¼; 2:35¾; 2:39; 2:37; 2:41; 2:42.

SECOND RACE.

Trotting Race—Mile heats; three in five; free for all horses that have never beaten 2:50; purse—eight hundred dollars; first horse, five hundred dollars; second, two hundred dollars; third, one hundred dollars.

Entries.

1. James L. Eoff, San Francisco, enters s. m. Baltimore Belle, (formerly Annie Stephens).
2. Barney Rice, San Francisco, enters s. g. Alex. Benham.
3. J. B. Stanton, Sacramento, enters b. g. Clipper.
4. A. F. Smith, Sacramento, enters b. m. May Fly.

Result.

Baltimore Belle	2	3	3
Alexander Benham	3	2	2

Clipper	dis.
May Fly	1 1 1

Time—2:39; 2:37½; 2:39¼.

TUESDAY, SEPTEMBER 13TH.

FIRST RACE.

Running Race—Sweepstakes for three year olds; mile heats; three in five; one hundred dollars entrance added; fifty dollars forfeit; to name and close with Secretary of Society on or before the twentieth of August; purse—five hundred dollars, to be divided in same proportion as other purses.

Entries.

D. E. Callahan, Sacramento, enters b. f. Nell Flaherty, three years old, by Rifleman, dam Jennie Hull.
Henry Walch, San Francisco, enters b. f. Susy Martin, three years old, by Norfolk, dam Pile, by Belmont.
William Meek, Haywood, enters b. c. Phil Sheridan, three years old, by Norfolk, dam Bonny Belle.
John Greer, Sacramento, enters g. c. Tom Atchison, three years old, by Norfolk.
N. Briggs, Napa, enters ch. f. ——, three years old, by Billy Cheatham, dam by Ashland.

Result.

Nell Flaherty	3 1 1 1
Susy Martin	5 dis.
Phil. Sheridan	2 3 dis.
Tom Atchison	1 2 2 2
Briggs' filly	4 4 dis.

Time—1:46⅗; 1:47; 1:49⅗; 1:50⅘.

SECOND RACE.

Running Race.—Two mile heats; free for all; purse—eight hundred dollars. First horse, five hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

R. T. O'Hanlon, San José, enters s. h. Medoc.
Thomas Atchison enters b. h. Bloomsbury.
H. Walch enters br. h. Sacramento.
Theodore Winters enters gr. h. Queen.
J. T. Devine enters b. h. Kirby Smith.
——— ——— enters —— Wakefield.

Result.

Medoc	2	dr.
Bloomsbury	3	dist.
Sacramento	5	2
Queen	4	3
Kirby Smith	1	1
Wakefield	dist.	

Time—3:44$\frac{1}{5}$; 3:49$\frac{2}{5}$.

WEDNESDAY, SEPTEMBER 14TH.

FIRST RACE.

Trotting Race.—Mile heats; three in five; free for all; purse—six hundred dollars. First horse, three hundred and fifty dollars; second horse, one hundred and fifty dollars; third horse, one hundred dollars.

Entries.

1. B. E. Harris enters b. g. Regulator.
2. J. S. Eoff enters b. g. Shoo Fly.
3. H. Walch enters s. h. Venture.

Result.

Regulator	2	2	1	1	1
Shoo Fly	1	1	2	2	2
Venture	dist.				

Time—2:30$\frac{2}{5}$; 2:31$\frac{3}{5}$; 2:30$\frac{4}{5}$; 2:32$\frac{3}{5}$; 2:31.

SECOND RACE.

Trotting Race.—Mile heats; three in five; free for all horses that have never beaten two minutes and forty seconds; purse—one thousand dollars; first horse, six hundred dollars; second horse, three hundred dollars; third horse, one hundred dollars.

Entries.

1. John Boggs enters ch. g. Jerome.
2. Alex. Sturgeon enters b. g. Billy Russell.
3. J. S. Colgrove enters b. m. Flora.
4. S. B. Whipple enters b. m. Harvest Queen.
5. J. S. Eoff enters b. m. Don't-Bodder-Me.

Result.

Jerome	2	2	0	0	2
Billy Russell	3	5	3	dist.	
Flora	4	3	4	dist.	
Harvest Queen	1	1	2	2	1
Don't-Bodder-Me	5	4	Dist.		

Time—1:32$\frac{4}{5}$; 2:38$\frac{3}{5}$; 2:32; 2:35$\frac{2}{5}$; 2:29$\frac{1}{2}$.

THURSDAY, SEPTEMBER 15TH.

FIRST RACE.

Running Race.—Two-mile heats; free for all three year olds; purse—eight hundred dollars. First horse, five hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

J. E. Tyree, Stockton, enters s. f. Carrie Miller, three years old, by Veto; dam, Fanny Medoc.

John Boggs, Princeton, enters b. f. Eva Bascomb, three years old, by Lodi; dam by Belmont.

Theo. Winters (W. Cobb), enters b. c. Pill Box, three years old, by Norfolk; Adie colt, by Bob Johnson.

R. T. O'Hanlon enters b. f. Maria Hall, three years old, by Norfolk; dam by Heenan.

Result.

Carrie Miller	1	3	4	dist.
Eva Bascomb	2	4	1	2
Pill Box	4	1	2	1
Maria Hall	3	2	3	ruled out.

Time—3:43$\frac{1}{5}$; 3:49; 3:53$\frac{1}{5}$; 3:55$\frac{4}{5}$.
First Mile—1:50; 1:51$\frac{1}{2}$; 1:58; 1:57$\frac{1}{4}$.

SECOND RACE.

Running Race.—Mile heats, three in five; free for all; purse—seven hundred dollars. First horse, four hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

Nathan Coombs, Napa, enters s. g. May-be-so, six years old, by Ashland; dam, Beechey Run.

J. T. Devine, Sacramento, enters b. h. Kirby Smith, five years old, by Gladiator; dam, Kate Mitchell.

R. T. O'Hanlon enters c. h. g. Al. Bascom, four years old, by Rifleman; dam, Fashion Bellma.
Thos. Atchison enters b. s. Idaho, four years old, by Volscian; dam, Endra.
E. Bent enters s. g. John Morgan, three years old, by Billy Cheatham; dam, by Niger Boy.

Result.

May-be-so	3	4	3
Kirby Smith	4	3	dist.
Al. Bascomb	1	1	1
Idaho	2	2	2
John Morgan	dist.		

Time—1:48⅖; 1:50⅖; 1:49⅖.

THIRD RACE.

Running Race.—Single dash of one mile; free for all two year olds; to name and close on or before the twentieth of August with the Secretary of the Society; fifty dollars entrance added; twenty-five dollars forfeit; purse—three hundred dollars, to be divided in same proportion as other purses.

Entries.

D. E. Callahan, Sacramento, enters h. Ben Butler, two years old, by Rifleman; dam, Jennie Branch.
John Boggs, Colusa, enters b. c. Mark Twain, two years old, by Norfolk; dam, Ariadne.
W. K. Squires, Rio Vista, enters b. m. Lady Norfolk, two years old, by Norfolk; dam, Cheatham.
A. Musick, Sacramento, enters b. s. Mark Moore, two years old, by George Moore; dam, Sallie Franklin.
Nathan Coombs, Napa, enters ch. f., two years old, by Billy Cheatham; dam by Ashland.
John Hall, Alameda, enters b. f. Jennett, two years old, by Woodburn; dam Esparanza, by Ringgold.
E. Bent, Contra Costa, enters s. f. Marietta Simes, two years old.

Result.

Ben Butler	dead heat.	2
Mark Twain	0	0
Lady Norfolk	0	0
Mark Moore	3	0
Coombs filly	0	1
Jennett	dead heat.	
Marietta Simes	0	0

Time—1:51⅘; 1:55⅕.

FRIDAY, SEPTEMBER 16th.

FIRST RACE.

Trotting Race—Two mile heats; free for all; purse, eight hundred dollars; first horse, five hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

1. B. E. Harris enters b. g. Regular.
2. John Boggs enters s. g. Jerome.
3. S. C. Boley enters b. g. Dexter.
4. George Treat enters ch. s. Venture.

Result.

Regulator	2	dis.
Jerome	3	2
Dexter	1	1
Venture	dis.	

Time—5:06½; 5:08½.

SECOND RACE.

Pacing Race—Mile heats; three in five; Billy Mayo to wagon, Longfellow to harness, and all others to go as they please; purse, four hundred dollars; first horse, two hundred and fifty dollars; second horse, one hundred dollars; third horse, fifty dollars.

Entries.

1. S. C. Boley enters s. g. Longfellow.
2. C. H. Shear enters b. g. Americus.
3. H. S. White enters blk. g. Onward.

Result.

Longfellow	1	1	1
Americus	dis.		
Onward	2	2	2

Time—2:28; 2:30⅖; 2:32⅖.

THIRD RACE.

Mile heats; three in five; special purse, one hundred and fifty dollars; first horse, one hundred dollars; second horse, fifty dollars.

Entries.

1. Algerine.
2. Rosedale.
3. Alameda Maid.

Result.

Algerine	3	3	3	2
Rosedale	1	1	2	1
Alameda Maid	2	2	1	dis.

Time—2:50; 2:47¼; 2:46⅗; 2:48⅗.

SATURDAY, SEPTEMBER 17TH.

FIRST RACE.

Trotting Race.—Mile heats; three in five; free for all horses that have never beaten two thirty-four; purse—eight hundred dollars; first horse, five hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

1. S. G. Boley enters b. g. Dexter.
2. A. T. Smith enters b. m. May Fly.
3. John Mackey enters b. s. Alexander.

Result.

Dexter	1	2	1	1
May Fly	dis.			
Alexander	2	1	2	2

Time—2:35; 2:37½; 2:32½; 2:36⅖.

SECOND RACE.

Running Race.—Mile heats; three in five; free for all; purse—eight hundred dollars; first horse, five hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

1. Martin Howell enters b. h. White Stocking, blue and white.
2. R. T. O'Hanlon enters s. g. Al Bascomb, blue and white.
3. Thomas Atchison enters b. h. Idaho, blue and red.
4. H. Walch enters br. c. Oliver Cromwell, fancy.

Result.

White Stocking	dist.		
Al Bascomb	1	1	1
Idaho	2	3	3
Oliver Cromwell	3	2	2

Time—1:48; 1:51; 1:53⅗.

THIRD RACE.

Running Race—Mile heats; free for all beaten horses; purse—five hundred dollars; first horse, two hundred and fifty dollars; second horse, one hundred and fifty dollars; third horse, one hundred dollars.

Entries.

William Meeks enters b. h. Sacramento, four years old, by Rifleman, dam Bonnie Belle.

Thomas Atchison enters b. h. Bloomsbury, six years old, by Bertin, dam Bonnie Belle.

H. Walch enters b. f. Lizzie Martin, three years old, by Norfolk, dam Pelo.

N. Coombs, ch. f. Briggs' Filly, three years old, by Cheatham, dam by Ashland.

Result.

Sacramento	4	dist., crossing, foul riding.
Bloomsbury	3	dist. flag.
Lizzie Martin	2	dist. flag.
Briggs' Filly	1	1

Time—1:50; 1:49⅜.

PREMIUMS AWARDED IN 1870.

FIRST DEPARTMENT.

THOROUGHBRED HORSES.

Exhibitor.	Animal.	Premium.
	Stallions.	
Nathan Coombs	Best stallion, four years old and over—Lodi	$75
L. P. Marshall	Best stallion, three years old—Montana	$50
John Hall	Best stallion, two years old—Ironclad	$40
J. Glucauf	Best stallion, one year old—General Bidwell	$30
John Hall	Best stallion colt under one year—Peggy Ringgold's colt	$20
	Mares.	
J. Glucauf	Best mare, four years old and over, with colt—Pastora	$60
George Treat	Best mare, four years old and over—Virginia	$50
John Dixon	Best mare, three years old—Emma Barnes	$40
John Hall	Best mare, two years old—Jeannette	$30
J. Glucauf	Best mare, one year old—Antelope	$25
Theodore Winters	Best mare colt, under one year—Evadne	$20
	Families.	
Theodore Winters	Best thoroughbred sire, with not less than ten of his colts, all thoroughbred—Norfolk	$100
Theodore Winters	Best thoroughbred dam with not less than four of her colts—Evadne	$60
David Freme	Best stallion other than thoroughbred, with not less than ten of his colts—George Moore	$75
A. Ely	Best dam, with not less than three of her colts—Nora	$50

HORSES OF ALL WORK.

Exhibitor.	Animal.	Premium.
	Stallions.	
D. M. Downey	Best stallion, four years old and over—Solano Chief	$40
R. A. Branton	Best stallion, two years old—Tickly my Fancy	$20
	Mares.	
George McWain	Best mare, four years old and over—Julia Ann	$30
L. Upson	Best mare, three years old—Queen	$20
L. Upson	Best mare, two years old—Rosa	$15
Peter Burns	Best mare, one year old—Nancy	$10

GRADED HORSES.

Exhibitor.	Animal.	Premium.
	Stallions.	
C. B. Hoffman	Best stallion, four years old and over—Lexington	$50
D. Berry	Best stallion, three years old—Henry Williamson	$40
A. Ely	Best stallion, two years old—Wesley	$30
M. E. La Murray	Best stallion, one year old—Clarence Manegan	$20
A. Ely	Best colt under one year, without reference to sex—No Name	$20
	Mares.	
A. Ely	Best mare four years old and under—Nancy	$40
C. H. Shear	Best mare, four years old and over, with colt—Alicia Mandeville	$50
C. B. Hoffman	Best mare, three years old—Ida May	$30
A. Ely	Best mare, two years old—Henrietta	$20
A. Ely	Best mare, one year old—Ceta	$15

DRAFT HORSES.

Exhibitor.	Animal.	Premium.
	Stallions.	
Henry Meacham	Best stallion, four years old and over—Pollok	$40
C. Barr	Best stallion, three years old—Barr's Dragon	$30
A. T. Nordyke	Best stallion, two years old—Young John Bull	$20
J. N. Dudley	Best stallion, one year old—Robert Bruce	$15
	Mares.	
Maurice Haley	Best mare, four years old and over, with colt—Molly and colt	$40
R. A. Branton	Best mare, one year old—Bessie	$15

ROADSTERS.

Exhibitor.	Animal.	Premium.
	Stallions.	
E. M. Skaggs	Best stallion, four years old and over—Young Rattler	$50
Lewis Dietz	Best stallion—St. Clair	$20
Colgrove	Best stallion, three years old—Whipple	$40
D. Flint	Best stallion, two years old—Yankee Blade	$30
	NOTE.—Judges recommend a premium for William Woodward's two years old gelding Honest John, no premium being offered for said horse.	
John Colgrove	Best gelding, four years old and over—Joseph	$40
	Mares.	
S. B. Whipple	Best mare, four years old and over—Lady Blanchard	$40
John Colgrove	Best mare, three years old—San Mateo Maid	$30
F. W. Hatch	Best mare, two years old—Nan	$20
	NOTE.—Recommend special premium to horse Honest George, stallion of all work.	
E. M. Skaggs	Best matched span carriage horses—Lady Washington and Lady Bell	Silver goblet—$40
W. B. Holcombs	Best double team roadsters—Bucephalus and Sherman	Silver goblet—$40

SADDLE HORSES.

Exhibitor.	Animal.	Premium.
J. W. Hawkins	Best saddle horse—Jeff Davis	Fine bridle
	Colts. For all except those entered as thoroughbred or graded.	
D. Flint	Best yearling horse colt—Edwin Forrest	$30
D. Flint	Best sucking horse colt—Blondin	$20
A. A. Trowbridge	Best yearling mare colt—Ellen	$20
A. Ely	Best sucking mare colt—No Name	$15
W. R. Wright	Best yearling horse colt—George	Special—$15

SWEEPSTAKES.

Exhibitor.	Animal.	Premium.
N. Coombs	Best stallion of any age—Lodi	Silv. pitcher—$150
Glueauf	Best mare of any age—Pastora	Silv. pitcher—$100

JACKS AND MULES.

Exhibitor.	Animal.	Premium.
E. Jacobs	Best jack—Sampson	$50
Thomas Edwards	Best jennet—Lady Franklin	$40
E. Jacobs	Best mule, two years old and over—Sam	$20
R. J. Houston	Best mule, one year old—Coaley	$15

DURHAM CATTLE.

Exhibitor.	Animal.	Premium.
	Bulls.	
Coleman Younger	Best four years old and over—Jeff Davis	$75
C. Younger	Best three years old and over—Glencoe	$40
Clark & Cox	Best two years old and over—U. S. Grant	$30
G. N. Sweezy	Best one year old and over—Duke of Cuba	$25
C. Younger	Best bull calf—Prince Charles	$15
	Cows.	
C. Younger	Best four years old and over—Rose Bud	$50
G. N. Sweezy	Best three years old and over—Beauty	$40
C. Younger	Best two years old and over—Lucky Lass	$30
C. Younger	Best one year old and over—Lady Kemp	$20
C. Younger	Best heifer—Lady Bell	$15

DEVONS.

Exhibitor.	Animal.	Premium.
	Bulls.	
J. R. Rose	Best four years old and over—Bloomfield	$75
S. Daniels	Best two years old and over—Victory	$30
J. R. Rose	Best one year old and over—Phil. Sheridan	$25
J. R. Rose	Best bull calf—Captain	$15
	Cows.	
S. Daniels	Best four years old and over—Ida	$50
J. R. Rose	Best three years old and over—Maude Second	$40
S. Daniels	Best two years old and over—Lassie	$30
Seneca Daniels	Best one year old and over—Belle	$20

AYRSHIRES.

Exhibitor.	Animals.	Premium.
	Bulls.	
S. Daniels	Best four years old and over—Sir Walter Second	$75
	Cows.	
S. Daniels	Best four years old and over—Ruth	$50
S. Daniels	Best two years old and over—Christie	$20

GRADED CATTLE.

Exhibitor.	Animal.	Premium.
	Bulls.	
E. Comstock	Best two years old and over—Billy	$20
Pete Burns	Best one year old and over—George	$15
G. N. Sweezy	Best bull calf—Ashland	$10
	Cows.	
J. D. Patterson	Best four years old and over—May Bird	$30
E. Comstock	Best three years old and over—Lilly	$20
Clark & Cox	Best two years old and over—Jennie Cox	$15
G. N. Sweezy	Best one year old—Ada	$10

CATTLE SWEEPSTAKES.

Exhibitor.	Animal.	Premium.
C. Younger	Best bull of any age or stock—Glencoe	$75
G. N. Sweezy	Best cow of any age or stock—Beauty	Silver pitcher—$50

SWINE.

Exhibitor.	Animal.	Premium.
Peter Burns	Best boar, two years old and over—Dick	$20
Charles Green	Best boar, six months and under one year—George	$10
	Breeding Sows.	
A. T. Nordyke	Best breeding sow, two years and over—Bright.	$15
Peter Burns	Best breeding sow, one year old—Dolly	$15
Peter Burns	Best sow, six months and under one year—Mary	$10
Charles Green	Best lot of not less than five pigs	$20

POULTRY.

Exhibitor.	Animal.	Premium.
Peter Burns	Best lot of white or gray Dorkings	$5
Peter Burns	Best lot of Jersey blues	$5
Charles Green	Best lot of Sumatra game	$5
Peter Burns	Best lot of English game	$6
Peter Burns	Best lot of white and dark Brahmas	$5

DUCKS.

Exhibitor.	Animal.	Premium.
Peter Burns	Best lot of ducks	$5

SHEEP—THOROUGHBRED SPANISH MERINOS.

Exhibitor.	Animal.	Premium.
	Rams.	
Thomas McConnell	Best ram, two years and over—King William	$30
Thomas McConnell	Best three ram lambs	$20
	Ewes.	
Thomas McConnell	Best three ewes, two years and over	$20
Ellen McConnell	Best three ewes, under two years	$20
Thomas McConnell	Best five ewe lambs	$20

FRENCH MERINOS.

Exhibitor.	Animal.	Premium.
	Rams.	
J. H. Glide	Best three ram lambs	$20

CROSS BREEDS OF THOROUGHBRED SPANISH AND FRENCH.

Exhibitor.	Animal.	Premium.
	Ewes.	
A. S. McWilliams	Best three ewes, two years and over	$20
A. S. McWilliams	Best three ewes, under two years	$20

GRADED SPANISH MERINO.

Exhibitor.	Animal.	Premium.
	Rams.	
Ellen McConnell	Best ram, under two years old	$20
	Ewes.	
Thomas McConnell	Best three ewes, over two years	$15
Ellen McConnell	Best three ewes, under two years	$15

SOUTHDOWNS—SPECIAL ENTRY.

Exhibitor.	Animal.	Premium.
	Rams.	
H. A. Rawson	Best ram, over two years	

GRADED SOUTHDOWN.

Exhibitor.	Animal.	Premium.
	Rams.	
H. A. Rawson	Best ram, under two years	

COTSWOLDS, THOROUGHBRED.

Exhibitor.	Animal.	Premium.
	Rams.	
Wm. M. Landrum.....	Best ram, two years and over—Prince of Ontario	$30
W. T. Wilson.....	Best ram, under two years—No Name	$20
Wm. M. Landrum.....	Best three ram lambs	$20
	Ewes.	
T. Butterfield and son..	Best three ewes, two years and over	$20
Peter Saxe and son.....	Best three ewes, under two years	$20

LEICESTERSHIRE.

Exhibitor.	Animal.	Premium.
W. T. Wilson.....	Best ram, under two years old	$20
T. Butterfield and son..	Best three ewes under two years, crossed with Cotswold	$15
H. A. Rawson.....	Best ram, two years old and over, crossed with Leicestershire	$20
Thomas Brewster.....	The Committee recommended special mention and premium for ram Neptune, as best mutton sheep of two years old	Diploma awarded.

STOCK SHEEP AND MUTTON.

Exhibitor.	Animal.	Premium.
Wm. M. Landrum.....	Best ram, two years old and over—Wm. Wallace	$20
W. T. Wilson.....	Best ram under two years old	$15
W. T. Wilson.....	Best three ewes, two years old and over	$15
Peter Saxe and son.....	Best three ewes under two years old	$10

SWEEPSTAKES.

Exhibitor.	Animal.	Premium.
Thomas McConnell.....	Best ram of any age or breed	Silver goblet—$30
Landrum & Rodgers...	Best ewe	Silver goblet—$25
W. T. Wilson.....	Best five ewes of any age or breed	Silver goblet—$30

GOATS—THOROUGHBRED.

Exhibitor.	Animal.	Premium.
Gray & Gillmore	Best Cashmere goat, buck—Sultan	$30
T. Butterfield and son	Best she goat	$20
T. Butterfield and son	Best three kids	$20

GOATS—GRADED.

Exhibitor.	Animal.	Premium.
Gray & Gillmore	Best lot of three	$15

SECOND DEPARTMENT.

MACHINERY.

Exhibitor.	Residence.	Article.	Premium.
Matterson & Williamson	Stockton	Best Union harvester, header and thresher combined	$20
William Sawdon	Grass Valley	California sewing machine	Special—Diploma.
Erich Lundquist	Grass Valley	Watchmakers' helpmate machine	Diploma.
William Eberhardt	Sacramento	Oval and round turning lathe	Diploma.
Baker & Hamilton	Sacramento	Moulding machine	$5
Baker & Hamilton	Sacramento	Improved separator	Framed Diploma.
Baker & Hamilton	Sacramento	Best cider mill and press	$10
Baker & Hamilton	Sacramento	Best broadcast seed sower	$10
O. Bonny	San Francisco	Best horse rake	Diploma.
O. Bonny	San Francisco	Best grain lifter for header	Diploma.
C. H. Hubbard	Sacramento	Best hay press	$20
Warden, Mitchell & Co	Springfield, O.	Best self-raking reaper	$10
Linforth, Kellogg & Co	San Francisco	Best combined "World" reaper and mower	Diploma and $20
Linforth, Kellogg & Co	San Francisco	"World" mower. The Committee regard this mower superior in design and workmanship, and in having its boxes protected from dust, etc., and its gearing cut so as to give smooth action.	Diploma and $10
W. B. Ready	Sacramento	Best corn cultivator	$5
W. B. Ready	Sacramento	Marsh's harvester	Diploma.
D. F. Gillis	Stockton	Best harrow	$5

MACHINERY—Continued.

Exhibitor.	Residence.	Article.	Premium.
B. F. Gillis	Stockton	Best harrow and seed sower	Framed Diploma.
M. S. Bowdish	San Francisco	Best farm feed mill	$10
Marsh, King, Miller & Co	Sacramento	Best fanning mill	$10
R. Stone	San Francisco	Fanning mill and grain separator	Special—Diploma.
Henry Stone	Silveyville, Solano County	Best windmill	$15
John Boggs	Chico	Best beehive	$3
E. R. Howes & Co	San Francisco	Double motion churn	$10
J. B. Jackson	Sacramento	Best washing machine and wringer combined	Diploma and $5
F. T. Houghton	San Francisco	"Little Giant" wringer	Diploma.
W. H. Keep	Stockton	Best well pump	$10
Parker & Hunt	Sacramento	Best apparatus for raising water for irrigating purposes	$20
M. R. Rose	Sacramento	Best steam pump for all work	Special.
M. R. Rose	Sacramento	For improvement on Blake's pump	Diploma.
Matherson & Williamson	Stockton	Horse powers	Diploma.
Treadwell & Co	Sacramento	Portable steam engine	Framed Diploma.
William Lyne	San Francisco	Hair picker	Diploma.
Knapp, Grant & Walton	San Francisco	Horse hoe and weed cutter	Diploma.
William Lyne	San Francisco	Broom scraper for cleaning broom corn	Diploma.
T. B. Lamb	San Francisco	Patent milk cooler	Diploma.
T. B. Lamb	San Francisco	Patent root cutter	Diploma.
Hopkins & Wenson	San Andreas	Vegetable chopper	Diploma.
Linforth, Kellogg & Co	San Francisco	Gerrish submerged pump	Diploma.
G. Schmeiser	Sacramento	Patent wine press	Diploma.
A. A. Flint	Sacramento	Combination draw lock	Diploma.
Treadwell & Co	San Francisco	Grape crusher and stem separator	Diploma.
Waterhouse & Lester	Sacramento	Dold's tenanting machine	Diploma.
John Stockman	Sacramento	Stone drill	Diploma.
A. T. Sprague	San Francisco	Bank vault door	Framed Diploma.
T. C. Churchman	Sacramento	Model snow plow	Diploma.
Wilkie Darling	San Francisco	Nathan & Dryfus' oil cups and cylinder lubricators	Diploma.
John A. Ball	Grass Valley	Elevator for dredging or excavating	Diploma.
William Smith	San Diego	Still and rectifier (model)	Diploma.
J. T. Harrison	Sacramento	Display of brooms	Framed Diploma.
W. Culver	Solano County	Weight power	Diploma.
John Ross	San Francisco	Boat detaching model	Diploma.

VEHICLES.

Exhibitor.	Residence.	Article.	Premium.
Pollard & Carvill	San Francisco	Fine clarence carriage	First—$50
Pollard & Carvill	San Francisco	Best family carriage	Premium.
Pollard & Carvill	San Francisco	Best top buggy	Premium.
Pollard & Carvill	San Francisco	Best display carriages	Diploma.
Larkin & Co	San Francisco	Best trotting buggy	First—Diploma and $15
Larkin & Co	San Francisco	Best doctor's phaeton	Special premium.
Larkin & Co	San Francisco	Best open buggy	Special premium.
Larkin & Co	San Francisco	Best four-spring family carriage	Special premium.
Larkin & Co	San Francisco	Best display unfinished work	Honorable mention.
E. Soule	Sacramento	Best farm wagon	First—$15
E. Soule	Sacramento	Best wheels and hubs of California locust	$10
E. Soule	Sacramento	Improvem't on thimble skein	Special—Diploma.
James McGinn	San Francisco	Child's hearse	Special—Diploma.
P. Caduc	Sacramento	Imperial carriage	Honorable mention.
James McGuire	Sacramento	Best wheelbarrow	Diploma.
W. H. Devalin	Sacramento	Patent iron wheels	Special—Diploma.
Waterhouse & Lester	Sacramento	Best carriage material, hubs, spokes, etc	Honorable mention.
Copeland & Defrees	Sacramento	Display of farming wagons	Honorable mention.

PLOWS.

Exhibitor.	Residence.	Article.	Premium.
Hill & Knaugh	Marysville	Best sulky two-gang plow	Diploma.
Matterson & Williamson	Stockton	Best two-horse single plow	$10
Matterson & Williamson	Stockton	Best three-gang plow	$20
David Fulton	St. Helena	Best one-horse garden plow	$5
W. Walton	San Francisco	Best single steel plow for general purposes	$10
W. Lyne	San Francisco	Best sidehill plow	$5
W. B. Ready	Sacramento	For two-gang plow	$15
J. Sursea	San Leandro	For ironclad two-gang sulky plow	$15

THIRD DEPARTMENT.

SILK.

Exhibitor.	Residence.	Article.	Premium.
William H. Banter & Co	Napa	Silk cocoons	Honorable mention.
Theodore Lerond	Sacramento	Best exhibition of the silk business, from the mulberry tree to the silk cocoon, including the feeding of the worms, their eggs, etc	$50
Edward Muller	Nevada City	Samples of cocoons	Honorable mention.
John Bradshaw	El Dorado	Samples of cocoons	Honorable mention.
David F. Hall	Los Angeles	Silk cocoons	Honorable mention.
Thomas A. Garry	Los Angeles	Silk cocoons	Honorable mention.
S. Finch	Santa Clara	Silkworms, cocoons, and eggs	Honorable mention.
Captain Blanding	San Francisco	Bale of reeled silk and cocoons in their natural state	Special—$50
A. Van Vleck	Placerville	Samples of whole and perforated cocoons	Honorable mention.

NEEDLE, SHELL, AND WAX WORK, CLOTHING, HATS, CAPS, FURS, ETC.

Exhibitor.	Residence.	Article.	Premium.
Miss Jennie Marks	Sacramento	Lamp mats	Honorable mention.
Miss Helen Low	Mokelu'ne Hill	Tatting	$3.
Mrs. Goldschmit	Sacramento	Embroidery	$5.
Mrs. M. C. Tilden	Sacramento	Needlework tidy	Honorable mention.
Mrs. T. S. Harris	Sacramento	Under clothing for men and women, and specimens of tatting	Special—Diploma.
Mrs. R. Westlake	Sacramento	Paper bouquet	Special — Honorable mention.
Mrs. Mary Moorehead	Sacramento	Crystalized sea moss, frosted work, etc	Special—Diploma.
Mrs. Boggs	Cache Creek	Crochet quilt	Special—$10.
Miss Agnes Hummell	Sacramento	Variety of mats, cushions, embroidery, etc	Breakfast knife.
Miss Dollie Brown	Sacramento	Stool cover, braided dress, and button charm	Special—Napkin ring.
Mrs. Henry Law	Folsom	Cotton knit stockings, and slipper pattern	Special — Honorable mention.
Philip Phillips	Sacramento	Lace work	$3.
Miss Mary Rosenberg	Sacramento	Crochet tidy, suspenders, daisy, mats, etc	Honorable mention.
Miss Daisy Ryan	Sacramento	Patchwork	Special—Napkin ring.
Miss Jennie Bradley	Sacramento	Patchwork quilt	$5.
Mrs. H. J. Miller	Sacramento	Log cabin quilt	Special — Honorable mention.

NEEDLE AND SHELL WORK, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
Miss Ada Wadsworth	Sacramento	Tatting tidy	Special—Napkin ring.
Mrs. M. Otis	Sacramento	Best display of quilts, spreads, and patchwork, in this class	Framed diploma and $10.
Miss Nellie Pierce	Sacramento	Patchwork	Special—Napkin ring.
Mrs. Sarah Beaumont	Stockton	Knit piano spread, tidies, and collar	Special—cup.
Mrs. General Collins	Sacramento	Patchwork quilt	Special — Honorable mention.
Mrs. J. L. Hummell	Sacramento	Embroidery, etc	Special — Honorable mention.
M. H. Kuhl	Sacramento	Infants' clothing, etc	Special—Diploma.
Mrs. Barrett	Sacramento	Best variety of artificial flowers	$5.
Miss H. M. Brooks	Sacramento	Best specimen of waxwork	$5.
Mrs. J. R. Sturtevant	Sacramento	Wreath of preserved flowers and autumn leaves in wax	Napkin ring.
Mrs. M. E. Stovall	Sacramento	Water color painting	Diploma.
Mrs. M. N. Dingley	Sacramento	Lace pillow, collar, etc	Honorable mention.
Miss J. M. Andran	Sacramento	Hair and feather wreaths	Special — Honorable mention.
Mrs. Arnold Heyman	Sacramento,	Worsted tidy, embroidered smoking cap, and handkerchief box	Honorable mention.
Miss Emma Myers	Amador	Seed and hair wreaths	Special — Honorable mention.
Mrs. M. C. Dufficy	Marysville	Child's dress, infant's hood, etc	Special — Honorable mention.
Mrs. Geo. W. Mowe	Sacramento	Worsted work	Special — Honorable mention.
Mrs. William Yule	Sacramento	Hair wreath	Honorable mention.
Mrs. Joseph Proctor	Sacramento	Wild flowers in wax	Special — Honorable mention.
Mrs. W. H. Devalin	Sacramento	Air castles	Special—Napkin ring.
Miss Landon	Sacramento	Wax fruit	$5.
Miss Mary Sparks	Sacramento	Sofa cushion, worsted work, etc	Honorable mention.
Miss D. Emmons	Sacramento	Case of velvet and lace hats	$10.
Mrs. M. J. Grinnell	Sacramento	Burr picture frames	Special — Honorable mention.
Harry Haskell	Sacramento	Necklace of watermelon seed	Honorable mention.
C. P. Heald	San Francisco	Best specimens of penmanship	Diploma.
P. A. Espina	Sacramento	Penmanship	Diploma.
Landers' Pacific Commercial College	Sacramento	Ornamental penmanship	Diploma.
F. Foster	Sacramento	Best display of blank books and binding	Special—Silver medal.
Hicks & Co	Sacramento	Display of blank books and binding	2d Special—Diploma.
J. C. Meussdorffer	Sacramento	Best silk hat	$5
D. H. Quinn	Sacramento	Best exhibit of men's hats and caps	$5
T. Armstrong	Sacramento	Best exhibit of horse collars	Special—Diploma.
M. D. Saunders	Sacramento	Howard's pat. hame fastener	Honorable mention.
M. F. Barr	Sacramento	Best display of saddle trees	$3
Hiram Cook	Sacramento	Best ladies' saddles	Special.

NEEDLE AND SHELL WORK, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
Hiram Cook	Sacramento	Best farm harness	$10
J. T. Stoll	Sacramento	Best gentlemen's saddles	Special—Diploma.
Hiram Cook	Sacramento	Best set of carriage harness	$10
Hiram Cook	Sacramento	Best display of saddles and bridles	$10
J. E. Parker	Sacramento	Single harness	Diploma.
H. Behrenhardt	San Francisco	Best display of trunks	Special—Diploma.
Samuel Wizinski & Co.	Sacramento	Best exhibit of boy's clothing	$5
A. Gilmore	Sacramento	Best dress boots	$5
S. R. Dodge	Sacramento	Best buck gloves	Special—Diploma.
J. T. Smith	Sonoma	Laboring and riding gloves	Special—Diploma.
James Parsons	Sacramento	Best display of ladies' boots and shoes	Special.
Thomas Beven	Yuba	Cotswold fleeces	Special—Silver medal.
Miss Lou. Nickerson	Lincoln	Crochet tidies	Diploma.
Mrs. C. Cook	San Francisco	Hair work jewelry	Premium.
Mme. Brosse	San Francisco	Dress cutting and patterns	Diploma.
Mrs. W. H. Devalin	Sacramento	Air castles	Diploma.
Samuel Jelly	Sacramento	Silverware	Diploma.
Mrs. J. Rippon	Sacramento	Phantom bouquet	Diploma.
C. H. Marble	Amador	Patent wood collar	Honorable mention.
Isaac P. Allen	Sacramento	Display of perfumery	Honorable mention.
I. L. Merrill	Sacramento	Lamps and oil	Honorable mention.
Oakland Cotton Manufacturing Co.	Oakland	Burlaps	Premium.
Mrs. A. F. Eitel	Sacramento	Bride's dress	Premium.
Henry White	San Francisco	Scrap book	Diploma.
Wm. Sharp	Sacramento	Display of carpets, rugs, etc	Special—Diploma.

FOURTH DEPARTMENT.

CABINET WARE—CALIFORNIA MANUFACTURE.

Exhibitor.	Residence.	Article.	Premium.
L. Castagnino	San Francisco	Inlaid center tables	Silver medal.
Phelan & Collender	San Francisco	Billiard table	Silver medal.
James Knapp	Sacramento	Best woodwork frame	Honorable mention.
F. Christopher	San Francisco	Chair and stepladder combined	Diploma.
E. Brown	Sacramento	Best invalid's chair	$5.
E. H. Green	Sacramento	Patent spring bed	Special diploma.
John Bruner	Sacramento	Best spring mattress	Special diploma.
John Bruner	Sacramento	Best dressing bureau	$10.
John Bruner	Sacramento	Best sofa	$10.
John Bruner	Sacramento	Best lounge	$5.
John Bruner	Sacramento	Best extension table	$5.
John Bruner	Sacramento	Best office chair	$5.
John Bruner	Sacramento	Best set of parlor chairs	$10.
John Bruner	Sacramento	Best center table	$5.

CABINET WARE—Continued.

Exhibitor.	Residence.	Article.	Premium.
John Bruner	Sacramento	Best pair of side tables	$5.
John Bruner	Sacramento	Best set of parlor furniture	$20.
John Bruner	Sacramento	Best display of furniture	$20.
John Bruner	Sacramento	Best display of mattrasses	$5.
John Bruner	Sacramento	Best writing desk	$5.
John Bruner	Sacramento	Best book case	$5.
John Bruner	Sacramento	Best wardrobe	$10.
D. L. Moulton	Sacramento	Best school seat and desk	$5.
Alex. Denney	San Francisco	Patent clothes dryer and unhitching shelves	Honorable mention.
Domingos & Esseg	Sacramento	Patent bedstead fastener	Special—Diploma.
W. L. Wright	Vallejo	Bouton & Ames' patent spring bed bottom	Honorable mention.

WOODENWARE.

Exhibitor.	Residence.	Article.	Premium.
Nichols, Falvey & Co	Sacramento	Best display of cedar ware	$5.
Nichols, Falvey & Co	Sacramento	Best display pine ware	$5 and silver medal.

MECHANICAL PRODUCTS.

Exhibitor.	Residence.	Article.	Premium.
N. Clark & Co	Sacramento	Best pottery of various kinds	Silver medal.
N. Clark & Co	Sacramento	Best sample drain tile	$5
N. Clark & Co	Sacramento	Best sample fire-brick	$3
N. Clark & Co	Sacramento	Best sample potter's clay	Diploma.
A. P. Andrews	Sacramento	Best model patent chimney cowl	Diploma.
Van Every & son	Sacramento	Best extension new home-comfort cook stove for coal or wood	$5
F. H. Merrill	Sacramento	Best patent stove collar	Honorable mention.
R. C. Terry & Co	Sacramento	Best improved French range for wood or coal, with boiler, steam ventilator, and hot water attachments complete	$10
R. C. Terry & Co	Sacramento	Best Palace and Richmond portable range for wood or coal, with warm or hot water attachment and roaster complete	Diploma.
Gillig, Mott & Co	Sacramento	Cook stove	Honorable mention.
Gillig, Mott & Co	Sacramento	Fruit can	Honorable mention.
Gillig, Mott & Co	Sacramento	Can tops and bottoms	Honorable mention.
William Friel	San Francisco	American vapor stove	Diploma.

MECHANICAL PRODUCTS—Continued.

Exhibitor.	Residence.	Article.	Premium.
W. H. Earl	Sacramento	Best milk cans	Diploma.
J. C. Hammond	Sacramento	I.X.L. metal	Diploma.
R. C. Terry & Co	Sacramento	Best challenge hot air furnace	$5
R. C. Terry & Co	Sacramento	Best copper, tin, and enameled cooking furniture	$10
R. C. Terry & Co	Sacramento	Best bronzed stand lamps and fixtures	Honorable mention.
F. T. Houghton	San Francisco	Rubins' patent saucepan	Honorable mention.
F. T. Houghton	San Francisco	Ironing holder	Honorable mention.
F. T. Houghton	San Francisco	Patent can opener	Honorable mention.
F. T. Houghton	San Francisco	Kitchen's patent mincing knife	Honorable mention.
L. Sweeny	Sacramento	Best brass goods	Diploma and $20
N. Clark & Co	Sacramento	Best pottery of various kinds	Silver medal.
N. Clark & Co	Sacramento	Best samples of drain tile	$5
N. Clark & Co	Sacramento	Best fire brick	$3
N. Clark & Co	Sacramento	Best potter's clay	Diploma.
L. Wells	Sacramento	Best trotting horseshoe	Honorable mention.
P. J. Phillips & Co	San Francisco	Portable gas burners and lamp	Diploma.
Knowlton & Harris	San Francisco	Best writing ink	Diploma.
P. Donnolly & Co	San Francisco	Best saleratus and best yeast powders	Silver medal.
M. H. Bottgers	Sacramento	Composition snow and salt water grease	Diploma.
F. H. Merrill	Sacramento	California luster	Honorable mention.
Johnston, LaGrange & Co	San José	California wheat starch	Diploma.
H. C. Kirk	Sacramento	Surgical instruments	Diploma.
C. H. Davis	Sacramento	Best case of tools	$10
Justin Gates	Sacramento	Soda fountain with Lisbon marble	Honorable mention.
W. H. Nichols	Folsom	Pruning shears and grape picker combined	Diploma.
W. Gwynn	Sacramento	Kimber's patent porcelain wall finish	Diploma.
J. F. Fugazi	Sacramento	Oriental oil hair dye	Diploma.
Hobson & Ayers	Sacramento	Best sample gas fixtures	Diploma and $10
Hobson & Ayers	Sacramento	Best porcelain washstand, steam heater, plumbers' goods, etc	Diploma and $10
Hobson & Ayers	Sacramento	For rebronzing old fixtures	Honorable mention.
I. L. Merrill	Sacramento	Lamp ware	Diploma.
Justin Gates	Sacramento	DeBose horse and family liniment	Diploma.
H. C. Kirk & Co	Sacramento	California glue	$5
T. L. Hunt	Los Angeles	Model portable fence	Diploma.
G. J. Exley	Sacramento	Model fence gate	Honorable mention.
D. Flint	Sacramento	Patent farm gate	Diploma.
F. A. Howard	Sutter Creek	Teel's patent fence	Honorable mention.
W. H. Gorrill	Oakland	Smith's patent truss bridge	Honorable mention.
J. T. Harrison	Sacramento	Model patent fence	Honorable mention.
B. Dennery	Sacramento	China ware, Bohemian platio Parian marble and porcelain bouquet	$10
B. Dennery	Sacramento	One twenty-four light glass chandelier	Diploma.
B. Dennery	Sacramento	Portable lamp and lantern—best display	Diploma and $10
Pacific Glass Works	San Francisco	Samples of glass work	Silver medal.
A. J. Kame	San Francisco	Best display fancy soaps	Silver medal.
A. J. Kame	San Francisco	Best display candles	$5
Reed, Hoagland & Newson	San Francisco	Attachment for windows	Diploma.

FIFTH DEPARTMENT.

BRANDIES.

Exhibitor.	Residence.	Article.	Premium.
C. G. Carpenter	Dim'd Springs	Best brandy three years old	$15
Charles Heinrich	Sacramento	Best brandy two years old	$10
J. R. Nickeson	Lincoln	Best brandy one year old	$5
C. G. Carpenter	Dim'd Springs	Best peach brandy	$15
J. R. Nickeson	Lincoln	Best pear brandy	Special—$5
Rock & Wilcox	Sacramento	Best rectified brandy	Diploma.
J. Reny	Sacramento	Best herb bitters	Diploma.
N. Woodward	Napa	Best brandy and wines	Diploma.

WINES.

Exhibitor.	Residence.	Article.	Premium.
George West	Stockton	Best white still wine, four years old	$10
Orleans Hill Vinicultural Society	Sacramento	Best white wine, three years old	$10
Orleans Hill Vinicultural Society	Sacramento	Best white wine, two years old	$10
B. N. Bugbey	Folsom	Best white wine, one year old	$10
Orleans Hill Vinicultural Society	Sacramento	Best red still wine, four years old	$10
Orleans Hill Vinicultural Society	Sacramento	Best port wine	$10
George West	Stockton	Best sherry wine	Diploma.
B. N. Bugbey	Folsom	Best muscatel wine	Special—Diploma.
J. R. Nickeson	Lincoln	Catawba wine	Special—Diploma.
J. R. Nickeson	Lincoln	Isabella wine	Special—Diploma.
J. R. Nickeson	Lincoln	Angelica wine	Special—Diploma.
Frank Ebner	Sacramento	Hock wine	Special—Diploma.
Orleans Hill Vinicultural Society	Sacramento	Reisling wine	Special—Diploma.
J. R. Nickeson	Lincoln	Blackberry wine	Special—Diploma.
George West	Stockton	Frontignac	Special—Diploma.
Orleans Hill Vinicultural Society	Sacramento	Tokay	Special—Diploma.
B. N. Bugbey	Folsom	Wine from Black Prince grape	Special—Diploma.
B. N. Bugbey	Folsom	Sparkling wine, two years old	$10
A. Fink	San Francisco	Sparkling wine, one year old	$10
Charles Heinrich	Sacramento	Wine vinegar	Diploma.
Charles Heinrich	Sacramento	Best white wine, eight years old	Diploma.
Orleans Hill Vinicultural Society	Sacramento	Best white wine, seven years old	Special—Diploma.
B. N. Bugbey	Folsom	Best exhibit of wines from foreign grapes	$20

BUTTER, HONEY, PRESERVED PICKLES, ETC.

Exhibitor.	Residence.	Article.	Premium.
A. T. Cotton	Freeport	Best twenty-five pounds June butter	First—$15
Mrs. E. Ellis	Sacramento	Best ten pounds fresh butter	First—$10
Mrs. E. F. Aiken	Sacramento	Best variety canned fruit	Diploma.
Mrs. E. F. Aiken	Sacramento	Best variety preserved fruit	Diploma.
Mrs. E. F. Aiken	Sacramento	Best wheat bread	$5
Boston Cracker Co	San Francisco	Best pilot bread	$2
Boston Cracker Co	San Francisco	Best biscuit	$2
Boston Cracker Co	San Francisco	Best soda biscuit	$2
Boston Cracker Co	San Francisco	Best butter biscuit	$2
Boston Cracker Co	San Francisco	Best sweet biscuit	$2
Boston Cracker Co	San Francisco	Best Boston biscuit	$2
Mrs. J. P. Odbert	Sacramento	Best variety jelly	Diploma.
Mrs. J. P. Odbert	Sacramento	Best peach jelly	$3
Mrs. E. F. Aiken	Sacramento	Best quince jelly	$3
Mrs. E. F. Aiken	Sacramento	Best apple jelly	$3
Miss Arabella Johnson	Sacramento	Best grape jelly	$3
Mrs. A. S. Morrison	Sacramento	Loaf hop-yeast bread	$2
J. S. Harbison	Sacramento	Hive honey and observatory hive	Special premiums.

SIXTH DEPARTMENT.

WHEAT AND FLOUR.

Exhibitor.	Residence.	Article.	Premium.
R. Threlfall & Bro	Stanislaus	Best two bushels white Australian wheat	Honorable mention.
Mrs. Peter McGregor	Sacramento	Best Egyptian wheat	Diploma.
T. L. Chamberlain	Lincoln	Best two bushels Australian wheat	First—silver medal.
T. L. Chamberlain	Lincoln	One hundred pounds California flour	Framed diploma.
A. J. Stiner	Yolo County	Sample wheat from fifty-two acres	$10
Pioneer Mills, H. G. Smith & Co	Sacramento	Best Chile wheat	First—$10
R. C. McCreary & Co	Sacramento	Best twenty pounds oat meal	Honorable mention.
R. C. McCreary & Co	Sacramento	Best twenty pounds cracked wheat	Honorable mention.
R. C. McCreary & Co	Sacramento	Best twenty pounds hominy	Honorable mention.
J. L. Keefer	Sacramento	Best fifty pounds California flour	First—silver medal.

SEEDS, ETC.

Exhibitor.	Residence.	Article.	Premium.
E. F. Aiken	Sacramento	Best sample castor bean	First—$5
D. L. Perkins	Rio Vista	Best sample flax	First—$5
D. L. Perkins	Rio Vista	Best one hundred and forty varieties garden seed	First—$10
C. W. Hoit	Sacramento	Best one hundred pounds sugar beet seed	First—$5
C. W. Hoit	Sacramento	Best fifty pounds muskmelon seed	First—$2
Wm. Crites	Brighton	Best four sacks Ramsdell's Norway oats	First—$5
Wm. Johnson	Richland	Best alfalfa seed	First—$5
A. B. Gilbert	Sacramento	Best yellow Dent corn	First—$5
A. B. Gilbert	Sacramento	Best white Dent corn	First—$5
A. B. Gilbert	Sacramento	Best early field corn	First—$5
Produce Exchange Company	San Francisco	Forty-four samples of wheat, six samples of barley, three samples of oats, one sample of rye, four samples of corn, two samples of flour	Framed Diploma.
W. Hunt	Oakland	Sample surprise oats, one hundred and thirty bushels to the acre	Diploma.

HOPS.

Exhibitor.	Residence.	Article.	Premium.
R. J. Merkley	Sacramento	Best sample hops from ten acres	First—$5

VEGETABLES, ROOTS, ETC.

Exhibitor.	Residence.	Article.	Premium.
P. K. Stewart	Sacramento	Best Walker's rambler cucumber	First—$3
P. K. Stewart	Sacramento	Best garden beans in pod	First—$3
P. K. Stewart	Sacramento	Best turnip blood beet	First—$3
A. B. Gilbert	Sacramento	Best display of vegetables	First—$10
A. B. Gilbert	Sacramonto	Largest pumpkin	First—$3
A. B. Gilbert	Sacramento	Best muskmelons	First—$3
Robert Williamson	Sacramento	Best display of sweet corn	$5
Robert Williamson	Sacramento	Best display of onions	$5
Robert Williamson	Sacramento	Best display of beets	$5
Robert Williamson	Sacramento	Best display of peppers	$5
Robert Williamson	Sacramento	Best and greatest variety of vegetables	$50
Robert Williamson	Sacramento	Best display of potatoes	$10
Robert Williamson	Sacramento	Best red onion	$3

VEGETABLES, ROOTS, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
Robert Williamson..	Sacramento.....	Best white button onion.....	..... First—$3
Robert Williamson..	Sacramento.....	Best red potatoes.....	.....$5
Robert Williamson..	Sacramento.....	Best yellow onion.....	.....$3
Robert Williamson..	Sacramento.....	Best celery.....	.....$3
Robert Williamson..	Sacramento.....	Best root salsify.....	.....$3
Robert Williamson..	Sacramento.....	Chickory lettuce.....	.....$2
Robert Williamson..	Sacramento.....	Best Chinese beans.....	..... Premium.
Robert Williamson..	Sacramento.....	Best early Goodrich potatoes	.....$5
Robert Williamson..	Sacramento.....	Best parsnips.....	.....$3
Robert Williamson..	Sacramento.....	Best carrots	.....$3
Robert Williamson..	Sacramento.....	Best peppers.....	.....$5
Robert Williamson	Sacramento.....	Best ice cream watermelon...	.....$3
Robert Williamson..	Sacramento.....	Best lima beans.....	.....$3
Robert Williamson..	Sacramento.....	Best Hubbard squash.....	.....$3
Robert Williamson..	Sacramento.....	Best Carolina sweet potatoes..	.....$5
J. H. Wolfe.....	Sacramento.....	Greatest display melons.....	..... First—$10
J. H. Wolfe.....	Sacramento.....	Best green flesh muskmelon..	.....$3
J. H. Wolfe.....	Sacramento.....	Best sweet corn.....	.....$3
J. H. Wolfe.....	Sacramento.....	Best mountain sprout water-melon	.....$3
D. L. Perkins	Rio Vista.....	Best long blood beet.....	..... First—$3
D. L. Perkins	Rio Vista.....	Best early rose potatoes.....	.....$5
C. W. Hoit.....	Sacramento.....	Best Wadsworth sugar beet...	..... First—$3
John Smith.....	Sacramento.....	Best display tomatoes.....	..... First—$5
John Smith.....	Sacramento.....	Best peck tomatoes.....	.....$3

FRUITS.

Exhibitor.	Residence.	Article.	Premium.
		Apples.	
A. S. Greenlaw.....	Sacramento.....	Best twelve varieties — best grown and correctly named	.....$20
E. W. Garvitt.....	Placerville	Best six varieties, correctly named—six specimens of each.....	.....$10
		Pears.	
C. W. Hoit.....	Sacramento.....	Best twelve varieties — best specimens and correctly named — three specimens each.....	.....$20
J. R. Nickeson.....	Lincoln	Best six varieties, and best specimens, and six of each, correctly named.....	.....$10
		Peaches.	
James Creighton.....	El Dorado.....	Best six varieties, and best grown specimens — six of each, correctly named.....	.....$15
C. G. Carpenter	Diamond Sp'gs	Best one variety, twelve specimens.....	.....$5
		Nectarines.	
E. W. Garvitt.....	Placerville	Greatest number of varieties and best specimens, correctly named.....	.....$10

FRUITS—Continued.

Exhibitor.	Residence.	Article.	Premium.
		Quinces.	
E. M. Smith	Coloma	Best apple, or orange	$5
		Olives.	
T. K. Stewart	Sacramento	Greatest number of varieties and best specimens	Special—Silver napkin ring.
J. R. Nickeson	Lincoln	Best general display of fruits, embracing best and greatest varieties	$25
		Dried Fruits.	
Mrs. E. F. Aiken	Sacramento	Greatest number of varieties and best specimens, not less than three pounds each	$10
Mrs. E. F. Aiken	Sacramento	Best dried prunes, ten pounds	$10
Mrs. E. F. Aiken	Sacramento	Best twenty-four pounds raisins	$15
Mrs. M. C. Tilden	Sacramento	Finest Bartlett pears	Special.
R. Van Vleck	Placerville	Superior display of pears	$5
O. H. Vinicultural Association	Sacramento	Excellent exhibit of Orleans and Reisling grapes	Special.
R. R. Carrington	Sacramento	Fine exhibit of white Nice grapes	Honorable mention.
J. H. Wilgus	Sacramento	Exhibit of extraordinary cluster of pears	Special.
E. H. Merrill	Colusa	Superior orange cling peaches	Honorable mention.
William Kramps	Diamond Sp'gs	Fine display of fruits	Special—$5
J. Runyon	Sacramento	Fine display of apples	Special—$5
M. Sprague	Sacramento	Fine display of grapes	Special.
		Plums.	
J. S. Bamber	El Dorado	Best six varieties, six specimens each	$10
E. W. Garvitt	Placerville	Best one variety, twelve specimens	$5
		Grapes.	
J. R. Nickeson	Lincoln.	Greatest number of varieties and best specimens of foreign grapes, three bunches each	$25
J. S. Bamber	El Dorado	Best one variety, six bunches	$5
E. M. Smith	Coloma	Best one variety for dessert or table use	$5
D. L. Perkins	Sherman Isl'nd	Best one variety for raisins	$5
		Figs.	
J. R. Nickeson	Lincoln	Greatest number of varieties and best specimens	$5
C. W. Hoit	Sacramento	Best one variety, twelve specimens	$3
		Prunes.	
E. M. Smith	Coloma	Greatest number of varieties and the best specimens	$5
J. S. Bamber	El Dorado	Best one variety, twelve specimens	$3
		Oranges.	
T. K. Stewart	Sacramento	Greatest number of varieties and best specimens	$5

FRUITS—Continued.

Exhibitor.	Residence.	Article.	Premium.
		Fruits.	
J. H. Murphy	Sacramento	Exhibits the best plate of Bartlett pears in the hall	Honorable mention.
B. S. Crocker	Placerville	Elegant display of fruits	Silver medal.
J. W. McCall	Placerville	Exhibits of fine grapes	Honorable mention.
Edmund Ellis	Sacramento	Fine black figs	Honorable mention.

SPECIAL PREMIUMS ON FRUITS.

Exhibitor.	Residence.	Article.	Premium.
Mrs. M. C. Tilden	Sacramento	For fine Bartlett pear	Honorable mention.
R. Van Vleck	Placerville	Fine Bartlett pears	Honorable mention.
Orleans Hills Vinicultural Society		Fine display of Orleans and Reisling grapes	Honorable mention.
R. R. Carrington	Sacramento	Fine white Nice grapes	Honorable mention.
J. H. Wilgus	Coloma	Pear clusters	Honorable mention.
E. H. Merrell	Coloma	Superior orange cling peaches	Honorable mention.
William Krump	El Dorado	Fine display of fruits	Silver medal.

SEVENTH DEPARTMENT.

DRAWINGS AND PAINTINGS, ETC.

Exhibitor.	Residence.	Article.	Premium.
D. H. Woods	Sacramento	Best life-size photograph in oil	$25
Howard Campion	Sacramento	Best specimen of portrait painting in oil, by California artist (Senator Lewis)	$25
Norton Bush	San Francisco	Best specimen of landscape painting in oil, by California artist (San Juan River)	$25
Sarah H. Coggins	Sacramento	Best colored photograph	Special—Diploma.
D. H. Woods	Sacramento	Best specimen of fruit painting	$10
Mrs. W. E. Brown	Sacramento	Best flower painting (Dolly's Bouquet)	$10
Mrs. W. E. Brown	Sacramento	Best California landscape in oil, by California artist (Half Dome and Merced River)	$20
D. H. Woods	Sacramento	Best exhibition of painting by any artist	Diploma and $30

DRAWINGS, PAINTINGS, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
S. W. Shaw	San Francisco..	Best fancy painting in oil (Fool's Cap)	$10
Mrs. Wm. Yule	Sacramento	Best specimen in water colors (clusters of fruit)	$10
P. Espina	Sacramento	Best pen drawing	$5
J. H. Plath	San Francisco..	Best carriage drafts	Special—Diploma.

MUSICAL INSTRUMENTS.

Exhibitor.	Residence.	Article.	Premium.
Jacob Zech	San Francisco..	Best grand piano	$20
Jacob Zech	San Francisco..	Best square piano	$20
Jacob Zech	San Francisco..	Best boudoir piano	$20
J. F. Cooper	Sacramento	Best flute	$5
J. F. Cooper	Sacramento	Best violin	Special.

MARBLE.

Exhibitor.	Residence.	Article.	Premium.
J. C. Devine & Bro..	Sacramento	Best sculpture	$20
J. C. Devine & Bro..	Sacramento	Best collection of marble	$40

FLORAL.

Exhibitor.	Residence.	Article.	Premium.
O'Brien & Dalton		Best floral design and miniature garden	$40
J. Hutchinson	Oakland	Cut flowers	$20

WINTER PREMIUMS FOR 1870.

ARTIFICIAL FOREST CULTURE.

In the Premium List of the State Agricultural Society for eighteen hundred and seventy one a premium of fifty dollars was offered for the largest quantity of useful forest trees planted during the year. At the meeting of the Board of Agriculture, held on the 9th inst., this premium was awarded to James T. Stratton, of Alameda county. There were three applicants for the premium—Mr. Stratton, and E. T. Aiken, and Thomas Edwards, of Sacramento County. The contest was considerably spirited, and has excited a good deal of interest. The subject being new in the State, and of so much general importance, we give below the statement of each applicant made in writing to the Board. They will be found to contain many valuable hints in regard to the cultivation of artificial forests.

Mr. Stratton proved that he had planted during the year, on fifty-three and one half acres of land, in one tract, thirty thousand blue gum trees (*eucalyptus globulus*) and three thousand red gum trees, and that all were in a healthy, growing condition. The following is

MR. STRATTON'S STATEMENT.

The seed from which the above trees were grown was gathered in December, eighteen hundred and sixty-eight, from trees about seven years old, at my own residence, in Brooklyn, Alameda County, and was sown in a frame under glass, on the fifteenth of April, eighteen hundred and sixty-nine, where the plants remained until they were about three inches high—in the middle of June following—when they were transplanted into boxes three feet square, six inches deep, and one hundred in a box. They were well attended to by a careful gardener until November following, when they were carefully cut out, so as to leave attached to each tree a ball of earth three and one half inches square and six inches deep, in which condition they were planted in their permanent location.

The land on which they were planted included a variety of soil, about one half being nearly level, with a stiff, dark loam of good quality, and the other half a heavy adobe, somewhat saline in places and slightly rolling. The whole had been under continuous cultivation, in cereals, during the past seventeen years, and had become somewhat impoverished by continual use. The land was prepared by being plowed in the usual manner, as soon as it had become moistened by the Fall rains, and and the soil was thoroughly pulverized to a depth of fifteen inches, in lines or strips two feet wide and eight feet apart from center to center, in which strips the young trees were planted, in rows eight feet apart each way; the task of planting ending about the first of February, eighteen hundred and seventy.

After they were planted they were well plowed, hoed, and cultivated,

and are now in splendid growing condition, generally about four and one half feet high, although many of them have attained a hight of eight feet.

The expense of the enterprise has thus far been about fifty-five dollars per acre of six hundred and fifty trees, exclusive of the land; and it is expected that they will have cost one hundred and fifty dollars per acre before any revenue can be derived from them, which will probably be in about seven years.

The eucalypti are considered very useful forest trees in Australia, where they are indigenous; the variety *globulus* being used extensively for piling (as they are free from the attacks of the toredo), and for flooring, as it is a beautiful white color and wears perfectly smooth. I have no doubt that it will be found useful for many other purposes.

Mr. Aiken proved that he had planted during the year, and in accordance with the plan set forth in his statement, namely, in nursery form—the rows five and six feet apart, and the trees one foot apart in the rows—the following number of trees of the varieties named:

Lombardy poplar and balm of Gilead, five thousand; morus multicaulis, seven thousand five hundred; morus alba (2), five thousand; California black walnut, ten thousand; American white maple, four thousand; American white elm, five thousand; English elm, two thousand; Spanish chestnut, four hundred; American chestnut, five hundred. All of which were in a good growing condition. Below is

Mr. Aiken's Statement.

In the fifth department of the premium list for eighteen hundred and seventy, entitled "Agricultural Products," the Board of Directors of the California State Agricultural Society have offered a premium of fifty dollars "for the largest quantity of useful forest trees planted during the year."

Here is an industry that is second to none in the whole list of agricultural productions. The rapid disappearance of the forest trees all over our State, especially in localities bordering upon our rivers and sloughs, has for several years excited the attention of all who claim a home in California and feel an interest in the future welfare of our State.

Since the writer became a resident of this county, there was a fine growth of oak and sycamore timber bordering the Sacramento from the city to its mouth, which, it would be safe to say, would yield from one thousand two hundred to two thousand cords of wood for every half mile, on either side. The oak trees were generally straight and handsome; many of them would make two rail cuts of twelve feet each in length, with several cords of wood left in the top. This fine growth of timber which once graced our river, tempered the atmosphere, and gave protection to the adjoining plains from the sweeping winds, has entirely disappeared—the woodchopper's axe has stripped the river farms of nearly all the hard wood timber, and the owners are now obliged to rely upon the growth of willows for firewood. One of the greatest disadvantages which the farmers of our plain lands labor under is the want of timber lands and forest trees. There is nothing to protect the growing grain, the young vineyards, or the newly planted orchard from the fierce northerly winds which visit us almost periodically, and generally

come at a most critical time for the farmer, and in two days time blow his hope of a good harvest for the season into despair.

These evils can be easily avoided and at the same time a supply of timber secured to every farmer, and in a much shorter time, too, than many would believe possible, by planting suitable trees in nursery form in different places or plantations on the farm, where they may be carefully cultivated for the first two or three years, when they may be properly thinned out and those removed planted in belts, always taking care that they run in such direction as to afford the best shelter to crops from the prevailing winds. Trees planted in this manner, and kept thoroughly cultivated and well mulched, will make a fine growth and require no irrigation. Mulching and cultivation are better than irrigation. This mode of cultivation has a tendency to encourage the roots to run deep, seeking a moist soil, and giving the trees a hold upon the earth that will prevent their being blown down. It has been demonstrated that nothing is required but an effort on the part of our farmers, skillfully directed, to grow many kinds of our most valuable forest trees on our dry plains, and it would be money well invested for all our agricultural societies to offer liberal premiums for the best and most extensive tree plantations. What better or more enduring monument than can be erected in living tree characters on our prairie farms? The managers of our agricultural societies should encourage the good work by liberal premiums. Make the good work popular, and our winds and plain wastes will soon be conquered.

The following is

MR. EDWARDS' STATEMENT.

I planted seven thousand locust trees last year and this—three thousand five hundred each year—for which I claim the society's premium. I have them set out in alternate rows, eight and ten feet apart, and four feet distant in the rows. I raised the trees from seeds I got in the neighborhood.

To germinate the seeds I put them in warm water, covered them, and set them by the stove for about a week, until they got started; then I set them out in nursery form for one or two years before they were set out in the artificial forest. The forest is on high land, about three miles south of Sacramento. I have plowed between the rows four times each year. The first I set out did remarkably well this year; and those of this year's planting are all alive, except two or three per cent. I will state here that the land had not been cropped for a number of years before the trees were set out. I think the expenses will be about fifteen dollars or twenty dollars a year; but I expect to get some firewood from it before the end of ten years, by trimming and thinning out.

I hope the society will excuse me for not bringing in a sample. In about ten years I think I shall have fence posts enough to fence my own land and some to spare for my neighbors.

The Board awarded the premium to Mr. Stratton, on the ground that their offer of a premium for forest trees planted during the year contemplated that the trees should be planted permanently where the forest was to grow, and not in a nursery from which the trees were to be taken and sold from year to year, as demand for them could be found. While they would encourage the laudable efforts of Mr. Aiken to introduce the growth of shade and forest trees in all parts of the State, and especially, as is suggested, on the plains, and in belts, so as to form wind breaks or

screens, and shelter the growing crops, they could not divert the premium offered for a special purpose from the claimant who had fulfilled the conditions contemplated. The Board did not express an opinion as to the proper distance trees for a forest should be planted. They leave this question to the judgment and experience of the cultivators, only requiring that the trees should be planted for permanent growth. The same premium is continued for eighteen hundred and seventy-one.

RAMIE.

First Statement of John S. Finch.

Hayward's, Alameda County, October 20, 1870.

Robert Beck, Esq., *Secretary State Board of Agriculture:*

Dear Sir: This will acknowledge the receipt of yours of eighteenth instant, and I hasten to answer your interrogatories seriatim, as follows:

First—In answer to "What have you done in raising ramie?" I have imported from the State of Louisiana ramie cuttings in sufficient quantities to plant above two acres of land, in advance, as I believe, of all other cultivators, to develop and advance our agricultural importance as a State, and the producing capabilities of our soil and people.

Second—"How much land have you planted in ramie?" In answer, I would say, a fraction over two (2) acres.

Third—"What is the cost per acre?" I answer, the ramie plants sufficient to plant one acre cost me, at the time I imported, two hundred dollars ($200), and for cultivating the same, six dollars ($6) per acre.

Fourth—"How much will an acre produce?" In answer, an acre will produce, according to my own experience and calculation, nine hundred and sixty (960) pounds of long, bleached fiber at one cutting, sample of which I send in envelop marked number one, valued at two dollars ($2) per pound. Envelop number two contains the fiber in a state for spinning (as sent to me from L. W. Wright, of Brooklyn, New York), value four dollars ($4) per pound.

Fifth—"What is your experience in raising and preparing the ramie?" In answer, I find it adapted to the soil and climate of California; not prejudiced by insects or other enemies; hardy, tough, and a vigorous grower, and soon to take precedence of all other textile fibers. My experience in preparing the ramie has been necessarily confined to what I required to show its fiber; but I am told by professional spinners and bleachers that fibre number one can be produced for six cents per pound.

All of which is respectfully submitted,

And I remain yours, with consideration,

JOHN S. FINCH.

RAMIE.

SECOND STATEMENT OF JOHN S. FINCH.

HAYWARD'S, Alameda County, December 28th, 1870.

ROBERT BECK, ESQ.:

Dear Sir: In accordance with the requirements of the State Agricultural Society of which you are Secretary, I herein submit, briefly, the following statement regarding the growth, cultivation, and value of the "ramie plant," for premium:

First—"As to the next previous crop," I would say that according to my calculation per acre, the crop would realize nine hundred and sixty (960) pounds of *long bleached fiber* at one cutting, and after the first year, the growth of the plant will admit of three cuttings, according to the experience of growers in the Southern States, which in the aggregate would yield per acre a crop of two thousand eight hundred and eighty (2,880) pounds, at the gross value of five thousand seven hundred and sixty ($5,760) dollars, calculated at two dollars per pound, when its estimated value is as high as three dollars per pound.

Second—"The kind and condition of the soil." My ground is a heavy, sandy loam, plowed twice, and not Summer fallowed. It is my judgment that in a fine, light, rich alluvial deposit soil, properly cultivated, the thriftiness of the plant growth is greatly enhanced, and in my judgment it is well adapted to any character of soil fitted for the successful growth of the cereals.

Third—"The expense of planting and harvesting." Ramie plants sufficient for an acre, at present prices, cost two hundred ($200) dollars per acre; and for cultivating the same, say six dollars per acre; and harvesting, say two dollars and fifty cents per acre. The value of the crop has been estimated approximately in the first interrogatory. In general terms, the prospective value of the ramie cultivation to California is beyond computation. So valuable is its fiber as a textile fabric material, admitting of admixture with silk or cotton goods, thus lending strength, beauty, and fineness which has not been attained by any other known material. It easily accommodates itself to our dry Summers, is thrifty in its growth, easily laid down, and hardy in its nature. Time, with proper machinery, and plenty of the raw material, will ultimately render it the most valuable manufacturing material grown; then in all truth it may be said that "Ramie is king." One other advantage attending its cultivation, and of great moment, is, that it is a continuous grower, perennial in its life, and needs but one planting. All of which is respectfully submitted.

JOHN S. FINCH.

STATE OF CALIFORNIA, }
County of Alameda. } ss.

John S. Finch, being duly sworn, deposes and says: That he raised a crop of ramie the last past season upon two acres of land measured by P. S. Moore, and that the statement annexed, subscribed by this deponent, as to the manner of cultivation, expenses, etc., is in all respects

true, to the best of his knowledge and belief, and that the sample of ramie is a fair sample of the whole crop for which I claim premium.

J. S. FINCH.

Subscribed and sworn to before me this twenty-fourth day of December, A. D. eighteen hundred and seventy.

JOSEPH GRAHAM,
Justice of the Peace.

Award.—The premium of twenty-five dollars was awarded to Mr. Finch.

CORN.

Statement of crops grown by A. B. Gilbert, on the American River, in Brighton Township. The quality of the soil is sandy loam. The manner of cultivating for corn: first, plow about eight inches deep; second, plant the corn in hills about three feet eight inches apart; third, cultivate with cultivators and hoes, and suckered or thinned when two thirds grown; fourth, cost of plowing and cultivating ten acres, two hundred and ten dollars; fifth, value of crop raised on ten acres, four hundred and thirty-six dollars and sixty cents; profit, two hundred and twenty-six dollars and sixty cents.

STATE OF CALIFORNIA,
County of Sacramento. } ss.

I, A. B. Gilbert, being duly sworn, say upon my oath that the foregoing is a correct statement of crop raised by me in said county.

A. B. GILBERT.

Subscribed and sworn to before me, January 27th, 1871.

WILLIAM ELLIS,
Justice of the Peace.

Award.—The premium of thirty dollars was awarded Mr. Gilbert.

HOPS.

To the Honorable the Board of Directors of the California State Agricultural Society:

The undersigned, R. J. Merkley, of Sacramento County, herein makes application for and claims the premium of twenty-five dollars offered by your society in the fifth department, class second, of the premium list of the California State Agricultural Society for eighteen hundred and

seventy, for "best crop of hops, not less than ten acres nor less than two thousand five hundred pounds per acre;" and in support of said claim presents the following statement and affidavit:

First—For statement of the next previous crop, and how measured, your Honorable Board is referred to my statement of eighteen hundred and sixty-nine, on file in the office of your Secretary.

Second—The soil upon which the field of hops was raised for which I claim the premium as above, is a sandy loam, intermixed with a very little clay, if any at all, and cultivated in the usual way of cultivation for the production of hops, being plowed and harrowed so as not to permit weeds to grow.

Third—The expense of cultivating, picking, and curing has been about seven and a half cents per pound, and the value of the crop is about twelve and a half cents per pound.

Fourth—I raised two thousand six hundred and fifty pounds per acre—making the whole crop of ten acres twenty-six thousand five hundred pounds. The profit of which, from the above statement of expense and value, is about one thousand three hundred and twenty-five dollars.

Fifth—The land upon which said crop was raised is in one contiguous piece, measured by myself, and contains ten acres.

R. J. MERKLEY.

STATE OF CALIFORNIA, County of Sacramento. } ss.

R. J. Merkley, being duly sworn, deposes and says: That he has raised crop of hops the last past season, upon ten acres of land measured by himself, and that the quantity of hops was two thousand six hundred and fifty pounds per acre, and that the statement hereto annexed, subscribed by this deponent, as to the manner of cultivation, expenses, etc., is in all respects true, to the best of his knowledge and belief, and that the sample of hops herewith presented is a fair sample of the whole crop for which he claims a premium.

R. J. MERKLEY.

Subscribed and sworn to before me, this twenty-sixth day of January, A. D. eighteen hundred and seventy-one.

A. COMTE, JR.,
Notary Public.

The premium of twenty-five dollars was awarded to Mr. Merkley.

WHEAT.

ROBERT BECK, ESQ., *Secretary California State Agricultural Society:*

I hereby make application for the premium of fifty dollars, given by the above Society for "best crop of wheat, not less than fifty bushels per acre," and append the following statement:

First—The previous crop was not measured, and no special account taken of it.

Second—The soil is sandy loam, was Summer fallowed, in good condition, and well broken up. It was sowed between the twentieth and thirtieth of October, eighteen hundred and sixty-nine, and then cultivated in. There was sown seventy-one pounds of Club seed per acre.

Third—It costs about three dollars to Summer fallow and sow the same, and about five dollars per acre to harvest, and three dollars and thirteen cents per acre to sack, and seventy-five cents per acre to haul to market. Total cost to deliver to market, eleven dollars and eighty-eight cents per acre.

Fourth—A sample of the above was on exhibition at the last annual meeting of the Society.

The crop was raised on a parcel of land measuring twenty-two acres, one hundred and forty-four rods, and six links, and is part of the north-east quarter of Section One, Range One east, Township Nine, and situated about two and one half miles southwest from the Town of Woodland, County of Yolo.

State of California, }
Yolo County. }

Adam Steiner, being duly sworn, deposes and says: That he raised a crop of wheat the last past season upon twenty-two acres, one hundred and forty-four rods, and six links of land, surveyed and measured by —— Donnovan, a surveyor of the Town of Woodland, County of Yolo, and that the quantity of grain was (3,159) three thousand one hundred and fifty-nine pounds per acre; and that the statement annexed, subscribed by this deponent, as to the manner of cultivation, expenses, etc., is in all respects true to the best of his knowledge and belief, and that the sample of wheat sent is a fair sample of the whole crop for which he claims premium.

ADAM J. STEINER.

Subscribed and sworn to before me, this sixth day of December, A. D. 1870.

ELIAS PETERSON,
Justice of the Peace.

The premium of fifty dollars was awarded Mr. Steiner.

CLAIMS FOR THE GOLD MEDAL FOR 1870.

FIRST DEPARTMENT.

STATEMENT OF JOHN HALL, OF ALAMEDA.

To the Committee to award Gold Medals in the First Department:

GENTLEMEN: I will state that I think I am entitled to the gold medal in this department on my exhibition of fine thoroughbred horses.

My entire exhibition embraced thirteen head, twelve of which were thoroughbred and one graded. Woodburn, Peggy Ringgold, and Moss Rose were imported by me from Kentucky, where they were considered as good blood as was to be had in the United States. The blood of Woodburn is not surpassed in the world. The balance of the stock exhibited by me are of my own raising in this State, and are all by Woodburn, except one two year old, which is by Norfolk. Take my lot of horses as exhibited by me at the Fair, and ask the opinions of competent and impartial judges, and I am satisfied they will pronounce it the finest lot of horses ever exhibited by one man at any Fair in California, and will compare well with any stock of horses in any country.

I received eight premiums at the late Fair of the Bay District Society and seven at the Fair of the Santa Clara Valley Agricultural Society. At the latter place I was awarded a premium on every animal I exhibited.

Hoping your committee will give the matter a careful consideration, I am most respectfully,

Yours, etc., JOHN HALL.

STATEMENT OF G. N. SWEZY, OF YUBA.

Gentlemen of the Committee on Gold Medals:

I submit to you that in your department the rearing of cattle is of more importance to the State than that of horses or sheep. Sheep will only afford us mutton and wool, the horse his service, while cattle will not only afford us our principal meats, but leather, milk, butter, and cheese, and service as well. It would be hard to do without beef, milk, butter, and cheese, while we might do without the sheep and horse, as silk, cotton, and other textiles would supply us with our principal

clothing in so favorable a climate, and the ox and mule be a fair substitute, with steamboats, railroads, steam plows, and threshers, for the service of the horse.

Again, the principal portion of the land of this State is high and dry plain land and foothills. This land is our best grain and wine land. This land, now so productive, will, in a few years devoted to successive cropping, become impoverished unless fertilized. We cannot fertilize with either timothy, clover, buckwheat, or other crops turned under, as in other countries, because the land is too dry to grow these. We then must depend upon the barnyard for fertilizers; and all our straw and hay must be consumed and converted there into manure and returned to the land. The straw left upon the land, or burned, as is the custom, will not enrich the land in so dry and burning a climate. It must go into the barnyard and there be used as food, bedding, and shelter for cattle, and receive and absorb the moisture of the cattle's droppings and ammonia of their urine, and be tramped and converted into useful and enriching fertilizers. This can only be done profitably by cattle, as the milk, butter, cheese, and increased weight of beef will profitably repay all the labor and care bestowed, to say nothing about the profit the farmer will realize from his manures as fertilizers to his other productions. To farm successfully the farmer must diversify his productions; and what interest can be so profitably carry on with the raising of grain as the rearing of cattle. It will be but a short time before the grain farmer will find the rearing of cattle indispensable to his successfully raising profitable crops of grain. I will not be tedious. You have enough to gather my idea.

I contend that my exhibition of full blooded Durham cattle, and of crosses between blooded Durham and blooded Ayrshire cattle, was the most meritorious exhibition, and one that would be greatly more for the interest of the State than any other cattle exhibition made at the State Fair. My blooded Durhams or shorthorns have perfect pedigrees. I exhibited five, and their records will be found in my name in volume five of the *American Herd Book*, page three hundred and twenty-two, and volume nine, first part, pages forty-five, one hundred and seventy-three, three hundred and ninety-five, and four hundred and fifty-three; second part, pages six hundred and ninety-six and nine hundred and fifty-nine. My old cow, Kate Dunne, is of the pure Teesewater milch stock; so is her heifer Beauty, and yearling First Duke of Yuba. Beauty took the sweepstakes, and has taken the premium every year of her life in her class, and two sweepstakes this year, being the only times shown. The First Duke of Yuba has always taken the premium in his class. He has been shown four times and taken four premiums and one sweepstakes. These all have size, weight, beauty, symmetry, and are good for beef or milk and butter; indeed, cannot be beaten. The first Duke of San Mateo is a fine animal—large, well built, and of exceeding weight for his age, two years. I believe there is no better animal standing than he is. He comes from the celebrated Bates & Booth's Duchess Durham, with a pure pedigree. His great grandsire and granddam are from the most celebrated bull in England, Vanguard, of pure milch stock. That strain of milk alone is worth thousands to have it introduced into this State. My other cattle exhibited are a cross of two milk strains, the milking Durhams and Ayrshire. These animals are symmetrically and finely made, of good size and form and weight, and the best of milkers and butter makers. I keep them for milkers. They make beau-

tiful cows; are small boned, though large, and are pictures in a pasture field or the barnyard; and fatten readily when dry, and yield in beef almost equal to the Durham.

As to Colonel Younger's exhibition, I have nothing to say, as I do not know the quality of his animals, and know nothing of their bloods, as I have not been able to find his or his animals' names in the Herd Book. I think either of our exhibitions superior to the Devons. I have not found them even in the Devon Herd book. You see by these last remarks I rely a great deal upon pedigree and purity of blood, so does your society. I have reason for so doing. We should always breed so as to improve our stock; this we cannot surely and successfully do without pure blooded animals. The cold blood will often cry back. The rule is to infuse superior strains and not tainted or inferior strains of blood into your herd. If possible the male should always be superior to the female; if so, the get will always be superior to the dam; if not, it will be inferior, and so we go back. Again, if there is a bad strain of blood in the male it may show itself way back to a remote scrub of an ancestor. In all cases it will and does weaken and neutralize the better strain and quality you desire most to propagate and preserve. So for the welfare of the State one pure blooded animal that will transmit its valuable properties is worth more than a whole herd of animals of impure blood, or without well established useful qualities of milk and beef. My animals are all kind and gentle, and by nature quiet and docile, good feeders, and in no way breachy. I have never had a bull or cow, old or young, leave my inclosure, though my fences are but the most ordinary; this trait, all who have purchased of me, give my animals. I submit the above, regretting that I have not time to give more attention to the subject.

Yours respectfully, etc., G. N. SWEZY.

STATEMENT OF W. T. WILSON, OF OREGON.

To the Committee of Gold Medal Awards on Stock, at the annual exhibition of the State Agricultural Society, held in Sacramento, September, eighteen hundred and seventy:

GENTLEMEN: Having made entry for the society's gold medal for stock exhibited at the fair grounds, I submit the following reasons why I compete for and claim the prize:

The value and profit of sheep raising is greater to California than that of any other kind of stock. As a growing industry its magnitude and importance is second to none else; and it is limited alone, prospectively, to the amount of pasturage and feed that can be economically produced for the range and feeding of such stock.

Less expense of care, labor, and food is required for sheep than is the case with any other stock that will equal the income; while but little outlay of money will start one in the business of sheep raising.

The rapid increase of sheep by breeding is too well known to require argument.

Mutton is fast taking the place of beef. It can be afforded at a less cost, and still allow a better profit to the producer. It is fast gaining in favor among learned men and consumers of meat; and it is quite

generally conceded to be as palatable, nutritious, and health giving as beef or any other meat. While beef is often forced upon the market in a condition hardly fit for consumption, good wholesome mutton is always obtainable at a lower figure.

The value of the wool clip in this State is an item worthy of high consideration. It is better than mines of gold, which simply represent values. It is a product that builds up factories, encourages home industry, and clothes the people substantially.

Although wool is one of our most valuable exports, it is but natural to predict that we will soon make it up into clothing for ourselves and the world, instead of selling our wool and buying our clothing. In a practical and economic light, clothing made from our fresh clipped fleece is worth one hundred per cent more than the sea-heated imported materials.

Home industry receives a direct encouragement from sheep raising that is yielded by no other class of stock, and as the breeds are improved farmers with a few acres will find it convenient and profitable to keep a few choice sheep. The introduction and encouragement of large, superior wool and mutton sheep will do away with the prevailing notion that thousands of acres of wild lands are necessary to profitable sheep raising.

As sheep are cheaply and easily kept, are more profitable, are of greater material value—including meat, wool, and industrial encouragement to this State—than any other stock, I see every reason why the gold medal should be awarded to sheep. The profits of horse raising, aside from horse racing, etc.—which is of very questionable importance—are quite small. More might be said in favor of cattle. But of the great and growing importance of sheep there can be no question.

My claims consist in the fact that I have exhibited the best specimens of the best variety of sheep—the Cotswolds—all of pure breed. These sixty-two sheep I have imported directly from Gloucestershire, England, the native country and home of this breed of sheep. These were selected and purchased of Mr. W. Lane, one of the most distinguished sheep breeders in England; and I confidently assert that no finer breed of sheep were ever brought to the United States. For size of carcass, excellence of wool, purity of breed and general excellence I assert they have no superiors.

Late prizes in England.—Among the twenty-two bucks and forty ewes shown by me at this Fair in Sacramento are four ewes, four years old, that took a first prize at the Lyncester cattle show last May; also one buck, "Lord Bathwell," took the first prize at the same show. I claim that there is not one ordinary or inferior sheep in the whole collection which I exhibit, and that no man can make, or has made a better showing of pure blooded Cotswold sheep in this country.

Habits of the Cotswolds.—They are strong and hardy and easily domesticated, making the best of mothers. They are quiet, not given to wild roving, but will be content on sparse pasturage; but they are full eaters and upon good feed will fatten quickly; they will thrive where restless sheep will grow poor.

The Cotswold wool is a long staple, the most valued by our manufactures—being easily combed and worked, lustrous, and best for staple goods. It brings the highest price in market, and the sheep yield quite as much again to the yearly fleece as the same number of Merinos. The Cotswolds are taking the place of Merinos as fast as they are brought in direct comparison and competition. The Cotswolds are the

favorites of all long wooled sheep; they produce more wool and longer wool than any other breed.

The Cotswolds for mutton are the most profitable sort of sheep known. There is a blending of fat and lean, and a juciness of meat altogether superior, while the weight will exceed any other sort.

In conclusion, I respectfully submit to your judgment the facts as stated. I might quote a mass of authority for every satement submitted, but prefer to leave the subject as presented to your intelligence.

One statement more which I overlooked: for crossing with other breeds, the Cotswolds are admitted by all good breeders of sheep to be superior to any other variety.

This enterprise is one calculated to be of vast and permanent value to this coast, and I claim some credit for this importation. I shall expect the gold medal for making the best exhibit of the best breed of sheep made at the State Fair this year—the most valuable show of stock.

Respectfully, W. T. WILSON.

SECOND DEPARTMENT.

STATEMENT OF LINFORTH, KELLOGG & CO., OF SAN FRANCISCO.

To the Gold Medal Committee:

GENTLEMEN: We claim the gold medal for the "World" mower and mower and reaper combined, because it is the most perfect machinery of its kind made. Unlike all other reapers and mowers, the gearing is cast blank, like this cut. It is accurately bored, then placed in the lathe and turned down to a standard size, which is unvarying as the finest calculation and skill can make it. From the lathe it comes in the shape shown in this cut, excepting that there is no tooth (the artist having introduced this to show its relation to the general surface of the blank), and is perfect in all its proportions, every part of it having been subjected to the most accurate measurement. From the lathe, the blank passes to the gear cutter, upon which the cogs are cut with faultless precision and the pinion delivered in the shape shown in this illustration. Nothing in mechanism can excel the exactness with which these gear cutters (models of ponderous elegance) do their work. They (the gear cutters) were invented and built expressly for this purpose, at a cost of two hundred and fifty thousand dollars, and are the wonder and praise of all who see them. They have been made to do work perfectly by a process which the best mechanical talent of the country had pronounced impracticable—all previous attempts having failed. Thus, from the character of the machinery and mechanical ability employed in its construction, you can judge of the mechanical excellencies of the "World" mower and reaper and mower. Every wheel and cog is made by the same process and with equal care. The blanks are cast as perfectly as any other casting, turned down to a standard gauge, bored with equal precision, and the cogs cut so faultlessly that one does not differ in the

smallest degree from another. The iron used is of the best quality, chiefly "Hanging Rock coal blast charcoal pig," better than which cannot anywhere be found, and the equal of which is rarely used in agricultural machinery. The shafting is made of iron of the best quality, and, like the gearing which it is to carry, prepared with the greatest care. It is turned throughout its length like that of the best grades of machinery, and fitted to the wheels with such exactness that there cannot be the slightest vibration. It is key-seated, as are the wheels, by machinery, so that when the two are fitted together they are substantially one.

Having secured perfect gearing in the manner indicated, the next important matter is to give it fixed relations. These are secured in the "World" first by means of a solid cast iron case frame into which the bearings for the shafting are moulded. These bearings, with their caps, are babbitted with metal of the finest quality, a jig representing the shafting being used to locate and regulate the proportion of the bearing precisely. We cannot here explain the necessity for the use of the jig further than that it is an invention of comparatively recent date, and is the only means by which the bearings can be so nicely adjusted as that all the undue friction (causing heating and rapid wear), so common in ordinary machinery, can be obviated. Second: the bolt holes, instead of being formed with a core and cast as commonly done, are bored through the solid iron, their size and location being fixed with faultless exactness. A slight elevation surrounding the bolt holes, through both frame and caps, is planed, so that the surface against which the bolt-head and nut are brought is perfectly smooth. A circular countersink is cut into the pillar block, and a stool, corresponding in form and size precisely with it, is cut upon the cap (the bolt hole passing through the center of both) by which means the position of the cap cannot be changed when drawn down to its place, no matter how great the strain in any direction. This device, peculiar to the "World," is one of special excellence, and its importance cannot be overestimated—indeed, cannot be appreciated by any one not familiar with the fact that to keep box caps firmly in place is a prime necessity.

The bolts, like those of the locomotive and the class of machinery to which it belongs, are turned throughout their length and made to fit so tightly into their holes that considerable force is required to drive them to their places. The thread is cut upon the lathe (not squeezed out as is commonly the case), the under side of the head faced smoothly, so that coming in contact with the planed surface of the case, as already described, the bearing is perfect. The nut, cold pressed and like the head of the bolt hexagon shaped, is faced up, and the thread cut on the lathe and coming in contact with the elevated and planed surface of the cap, makes a fit which, with the permanency of the bolt cap, sufficiently accounts for the fact that no nut or bolt has ever been known to come loose. Every wheel, shaft, bolt, and nut being perfect in itself, accurately adjusted, each in its relation to the other, and secured with unchangeable permanency, the movement of the whole construction is as easy, noiseless, and smooth as that of the locomotive or engine lathe. Protection to the gearing, the importance of which is apparent, is secured completely by means of a hinged cover, which with the solid iron case or frame excludes water, sand, grass, and indeed every kind of dirt which could in any way hinder the movements or cause wear to the vitals of the machine.

The durability of the "World" can only be determined by a comparison of it with the machinery built in the same manner to be used for other purposes. The engine lathe, which is in no point superior to it (the same material and mechanism being common to both), after constant use during an average of ten (10) hours each working day for twenty (20) years, and shows little, if any, indication of wear. There can be no reason why the "World" should not last and do its work an equal length of time, and the proof of this is apparent in every machine yet built, the testimony of those who have used it since its introducion being to the effect that "there is not the least evidence of wear in any part of the gearing." The same causes which insure its durability equally establish its freedom from liability to derangement. The importance of this to the farmer, who with a full force of hands employed at high wages, is depending upon his machine for the prompt dispatch of the harvest work and the security of his crops, is too manifest to be discussed. Of the "World," one who has thoroughly tried it says: "It worked like a charm, and there was no hindrance in the way of tinkering, not even for a moment."

The mowing bar of the "World" is made of cold rolled iron of the best quality, it having been clearly demonstrated that it best answers the purpose. The knife is greatly strengthened and improved. The heel (made of steel and planed down so as to secure easy movement), extends with a gradual taper out upon the knife, thus insuring perfect safety to both, whatever may be the shocks or resistance the latter may meet.

The guards are of iron of the best brands, forged by regular "guard makers," instead of being cast or malleable, as is commonly the case with many other machines. The inside is lined with cast steel, then ground so that a sharp edge is presented on both sides, and the keen and highly tempered knife vibrating rapidly through them, the grass, however tangled, wet, heavy, or dry, is mown so easily and smoothly that, as an enthusiastic admirer says: "It is solid pleasure to see it work." The guards are highly polished, so that they offer nothing to which wet grass can cling.

The rolling motion of the bar enables it to follow and adapt itself to the undulations of the surface over which it is cutting, thus making a stubble of uniform length and clean work anywhere. This is further facilitated by the drag bar, which, like the runner of the "Yankee Jumper," carries the bar and knife down into and over ditches and dead furrows, and insures its safe passage over obstacles of every kind without jar or danger of breakage.

The parallel movement, an arrangement peculiar to the "World," by which the knife and pitman are kept perfectly in line (no matter how low the bar may sink or how high it may be lifted), thus preventing any binding or strain upon either, is a point of acknowledged and superior merit.

The ball and socket pitman joint provides for every twist and strain to which the pitman is liable, thus securing an unramped movement while allowing the bar perfect freedom to adapt itself to the surface, however rough or rolling may be the ground.

The lifting arrangement is a simple lever and chain, so adjusted that the cutter bar can be raised to and by means of a pawl and ratchet, conveniently located and under easy control, kept at any hight desired to clear stumps or other formidable obstacles. The purchase is such that very slight effort is used to handle it.

We do not wish to consume the time of the committee, but are anxious to have them understand all the points of superiority we claim for the "World." It is emphatically the machine for this coast, and if we receive such encouragement from your committee as we think we are entitled to, *i. e.*, the gold medal, it will be a great inducement for us to make the effort to have the machine manufactured here, because it is so peculiarly adapted to this coast where the dust and sand soon eut away and wear out machines that are not protected by being completely covered in an almost water tight case, as is the "World." It seems to us that we are entitled to the gold medal over all other competitors, for the most useful, perfect, and complete machine yet made. It stands without a rival.

Your decision (if favorable, as we think it ought to be and will be), may be the means of starting the manufacture of this kind of machinery here, which ought to be done, we all know, and so add another interest to our material prosperity on this coast.

Yours respectfully, LINFORTH, KELLOGG & CO.

STATEMENT OF WILLIAM SAWDON.

To the Gold Medal Committee:

I submit to you my claims for the gold medal, which I trust will meet with attention and careful investigation.

The Californian Sewing Machine is the first that ever was invented on the Pacific Coast, and also the first ever manufactured in the State of California. It is one of the cheapest and most durable. There is no difficult movements in it, and is easily managed, and not liable to get out of order, like others. It works easily, and with very little noise. It will sew the finest muslin, or the strongest cloth or leather; and by a simple arrangement the thread is passed from the spool to the needle without having a hole to thread. It will do all the different kinds of work, such as hemming, braiding, tucking, felling, etc., and is equal in every respect to any imported machine. It is also an important item in Californian manufacture. Thousands of dollars have been sent to the East for machines which can be kept at home; besides, it will furnish employment to molders, machinists, carpenters, etc.

Those claims I submit for consideration, etc.

Yours, respectfully, WM. SAWDON.

STATEMENT OF ERRICK LUNDQUEST, OF GRASS VALLEY.

To the Gold Medal Committee:

The claims of the undersigned for award of the gold medal for the watchmaking lathe are based on the following grounds:

The machine is entirely new and different from any now in use, and having for its design the enabling of watchmakers to construct or repair any part of a watch, excepting the main and hair springs and dial, with-

out involving the trouble and expense of procuring a separate machine for every different part of a watch to be constructed or repaired.

The machine is a combination of machines, all in one, and by it a workman can make a correct duplicate of any part of a watch that can possibly get broke, including the cases, by a quicker, easier, and more correct method.

It is a valuable invention, not only to watchmakers but to machinists in general, who can apply its principles to their calling with ease and profit.

To bring this machine to perfection has cost an immense amount of labor and study.

It is a California invention, and well worthy the attention of every watchmaker and machinist for the accuracy of the work which its use will insure, as well as for its great labor-saving qualities.

I am perfectly willing that it should undergo any amount of further examination, and will cheerfully give a complete personal explanation of all its parts.

Respectfully, ERRICK LUNDQUEST.

STATEMENT OF POLLARD & CARVILL, OF SAN FRANCISCO.

To the Gold Medal Committee:.

GENTLEMEN: We lay claim to the State Agricultural Society's gold medal in our department. We had on exhibition six vehicles: one Clarence, one family carriage, three top buggies, and one open buggy. We claim that our display showed better work than ever was exhibited at any Fair, and most certainly a larger and better than was on the list at the last meeting of the Society. All of the work exhibited by us was of our own manufacture, the work, even to the bending of the rounded lights in the beautiful Clarence, being done in our shop.

Yours respectfully, POLLARD & CARVILL.

STATEMENT OF C. H. HUBBARD, OF SACRAMENTO.

To the Gold Medal Committee:

I would most respectfully ask of the Board or the committee who are to award the gold medal for the most meritorious exhibit of California manufactured and invented machinery, to consider my claim for the same. I ask for the medal offered to this department, basing my application on the Price's Patent Hay Press, which is purely a California invention, and all of California manufacture. It is a press that has proven to be better than any other manufactured in the United States. In California, where hay baling is one of the most necessary branches of agriculture, it has driven all other kinds of presses out of market. Its reputation here cannot be doubted, as many of them are now in use, and all who have used them are ready to certify that this press is much better than any other they have ever seen. The inventor is now about to introduce it into the

Eastern States; heretofore his capital has not been large enough to do it. I claim for this invention a press upon entire new principles, combining strength, rapidity, and compactness never before obtained in a press. A full description of the working of the press would require too much of your time. (A description will be given if requested.) Being an invention which is of great benefit to the agricultural portion of the State, and purely of California invention and manufacture, I think it well worthy of your consideration; and if the committee who are to award this medal will give my application their consideration, I think they will agree that this press was the most meritorious invention exhibited in that department.

I am, yours most respectfully, C. H. HUBBARD.

THIRD DEPARTMENT.

STATEMENT OF HIRAM COOK, OF SACRAMENTO.

To the Committee to Award Gold Medals:

GENTLEMEN: The undersigned, in accordance with the regulations of your honorable Society, herewith very respectfully submits his claims for award of gold medal for the third department.

I base my claims as follows:

First—Your Committee on Premiums have awarded me first premium on the best carriage harness, best farm harness, best ladies' saddle, best display of riding bridles; also, best assortment of saddlery on exhibition at the State Fair in eighteen hundred and seventy.

Second—The above articles were manufactured in Sacramento, where I have been manufacturing harness, saddles, and everything in the above line for the last eighteen years.

Third—I am using California leather only, and employing a large number of hands in the manufacturing of harness, saddlery, collars, whips, lashes, etc. I therefore claim your honorable consideration.

Respectfully, HIRAM COOK.

STATEMENT OF JOHN S. FINCH, OF HAYWARD'S.

To the Board of Award of Gold Medals:

GENTLEMEN: Herewith please find a stalk and the rough fiber of ramie plant, which I have entered in competition for the gold medal premium as a new and valuable product grown in the County of Alameda and State of California.

Its general merits, though lately introduced in this country, are becoming generally acknowledged, and as it is likely to effect a great revolution in the manufacture of fibrous fabrics, it is of the utmost importance that a knowledge of its great intrinsic value be universally diffused.

I claim to be the pioneer introducer and cultivator of the ramie plant in California. I claim for the ramie plant a superiority over every known fiber in use in strength, durability, texture, and cost. I claim for it that it is susceptible of culture in almost any soil; that as an exotic it becomes readily acclimated; that it is cheap to produce it; that it is easily cultivated; that it has fewer enemies in its growth than other fibers; that neither drought nor wet weather will injure it; that it propagates rapidly; that it produces largely; that it commands high prices; that a ready market invites general production; that it opens up a new channel of industry that will revolutionize the material interests of the State; that its introduction generally will develop new industries among our people by which employment will be furnished for thousands of laborers who will make their homes among us; that it will furnish the means by which manufactories will spring up; that but little capital is required in its production; that it is as strong as hemp, as flexible as flax, and can be made as fine and firm as silk; that it furnishes a material in which the poor can afford to be finely clad; that the plant itself is healthy and vigorous, and that its leaves are susceptible of being manufactured into paper of excellent quality.

These and other reasons specially set forth in the accompanying pamphlets are a few, and only a few, of the reasons I urge in favor of this plant so justly celebrated, and afford the reasons upon which I claim the award of the gold medal premium.

With these statements I take pleasure in handing you specimens of the plant referred to, as well as of the rough fiber.

Very respectfully yours, JOHN S. FINCH.

STATEMENT OF JAMES PARSONS, OF SACRAMENTO.

To the Gold Medal Committee:

GENTLEMEN: I claim the gold medal premium for the following reasons:

First—The styles of gaiters, shoes, and balmorals which I exhibited at the State Fair of eighteen hundred and seventy were all of California manufacture, and more elegant than any of the same class ever imported or made in this State, not excepting those from the best Eastern and European markets.

Second—For workmanship and beautiful finish I claim they are superior in every respect to any ever imported, and certainly far ahead of any ever exhibited or manufactured in this State.

Third—This branch of home industry, which I represented at the late State Fair, with proper encouragement, will save millions of dollars that annually leave this State for the East and Europe. I hope the committee will, therefore, award me the gold medal.

Respectfully yours, JAMES PARSONS.

STATEMENT OF H. M. BROOKS, OF SACRAMENTO.

To the Gold Medal Committee:

My application for award of a gold medal for exhibition at the last

State Fair is based on the art of successfully imitating nature in wax work.

Respectfully, H. M. BROOKS.

STATEMENT OF MRS. C. COOK, OF SAN FRANCISCO.

To the Gold Medal Committee:

It having been desired that I should submit some of the reasons why the gold medal of my class should be awarded to me, I will state that I have, for at least seven years, made the best display of hair braids and fine device and landscape hair work of any one on this coast. This has been allowed by the press and also by experts and critics. The articles I exhibit are home manufacture. I therefore say, with full confidence, that my manufacture is the means of keeping a much larger amount of capital in the State than many larger ones of other characters, and I trust will not receive a less degree of encouragement than I received in the Eastern States before making California my home, more especially as since that time I have made important improvements every year, and should you appreciate my efforts sufficiently to encourage me, I propose to make a still better display next year. It is my intention to show the entire process of manufacture, which will be very interesting and very attractive; this you will understand will benefit your institute and the State. I also intend to display two excellent workstands of my own invention. They work well and easy, raising and lowering the braids as desired, and being, I think, as near perfect for the purpose intended as possible. Trusting that you will give my application for the gold medal of my class a favorable consideration,

I am your obedient servant, C. COOK.

STATEMENT OF F. FOSTER, OF SACRAMENTO.

To the Gold Medal Committee for eighteen hundred and seventy:

Gentlemen: Permit me to present to you the statement of my claim to the gold medal for the most meritorious exhibition in the third department, including textile fabrics, mill, and other manufactures.

My exhibition consisted of samples of bookbinding, embracing blank books in every style for general and special purposes, also printed books in all varieties of cover, and finished in all the various styles of workmanship. The regular committee in this department awarded to my exhibition a silver medal, being the highest premium paid to any exhibitor in the department. This award was made for the superior excellence of the exhibition itself, and may be considered as a special recommendation for the gold medal, to the extent that that committee had the means of judging. But as I am informed that your committee may, in their discretion, and probably will, take into consideration all legitimate circumstances connected with the claimant's business that may tend to add merit to the exhibition, I venture to call your attention to the following facts: Mine is the oldest bookbinding establishment on the

Pacific Coast. It was commenced in eighteen hundred and fifty-five, and has been in constant operation from that day to the present time. Like the pioneers in all other manufacturing industries on this coast, I have met with many discouragements, and have labored under many disadvantages. Not the least among these has been the sharp competition of imported ready-made work, especially in the line of blank books of every description. While eastern establishments work upon the plan of a division of labor, each devoting its attention to only one special class of work, the peculiar isolated condition of our State has been such that, in order to secure work enough to keep my hands employed, I have been compelled at great expense to provide machinery and skilled labor for the accomplishment of all varieties of work, performed in other countries in several establishments. The high price of labor and material here in early days was almost a complete bar to the success of my enterprise; but having once engaged in it, I determined to persevere as long as I could make it afford a livelihood. Even now I am unable to compete with importers of blank books for general purposes, but am compelled to depend for patronage upon those who require work of a special character, and can appreciate work of high merit, and are able and willing to pay for it—such as banks, large mercantile establishments, State and county offices, etc. A large portion of my exhibition was work of this character, made to order. The material used in my establishment, such as paper, leather, thread, glue, cloth, etc., was formerly all imported. but I have always made it a rule to purchase homemade articles whenever I could find them; and I am happy to say that most of these materials are now being manufactured here, and by giving encouragement to my enterprise by awarding to me the gold medal, your committee will also be indirectly encouraging the manufacture of all the materials used by me.

I could draw comparisons between my exhibition and those of other parties in competition with me, but do not consider it necessary, or perhaps proper to do so, as the committee are abundantly able to do that for themselves. I will only say that next to the "art preservative" mine may be classed as important, as its direct tendency is to preserve in a neat and convenient form for the use of mankind the best thoughts of our best and ablest men.

All of which is most respectfully submitted in faith and hope.

F. FOSTER.

FOURTH DEPARTMENT.

STATEMENT OF ISAAC P. ALLEN, OF SACRAMENTO.

To the Gold Medal Committee:

The reasons why we should have a gold medal awarded us for display during your last exhibition are, first, that there was no display of like goods that at all approached our display in magnificence, taste in arranging, and quality of articles. They were all manufactured in the United States. They equal if not surpass French goods of the same class, and they are noted the world over for magnificence and "keeping" qualities.

Secondly, it added a great deal of cheerfulness to the part of the Pavilion in which it was placed. This was remarked by many. In fact, I might say that it was *the* feature of the new part of the Pavilion. Trusting that the above reasons may be evidence enough to your committee of our just claim to the award asked for,

We are, yours truly, ISAAC P. ALLEN & CO.

STATEMENT OF JOHN BREUNER, OF SACRAMENTO.

To the Gold Medal Committee:

The reason why the gold medal premium should be awarded to me on the articles mentioned herein is:

HOME MANUFACTORY.—One Turkey lounge, one sick chair, one walnut high dining chair, two walnut embroidered ladies' chairs, one walnut parlor suit (seven pieces), one California laurel parlor suit (seven pieces), one attorney's office desk, with revolving desk, book shelves of walnut and laurel; one office rotary chair, two bedroom chairs, one rocking chair, one walnut hat rack, one towel rack, one spring mattress, one hair mattress.

Any good mechanic must acknowledge that the articles mentioned are the best of workmanship, and cannot be excelled; and it was the best display ever exhibited in this State.

Very respectfully, JOHN BREUNER.

STATEMENT OF R. C. TERRY & CO., OF SACRAMENTO.

To the Honorable Committee for Awarding the Gold Medal at the State Fair of eighteen hundred and seventy:

Our reasons for claiming the medal are that we believe we had the best and most meritorious display in the fourth department of home (or domestic) manufacture, added to our goods partly and wholly manufactured abroad.

Our French ranges, broilers, copper boilers, and copper furniture are California manufacture, mostly of our own make, and our display of stoves and heaters, mounted and partly manufactured by us. In short, we claim that we exhibited more home manufactured goods than any other party in this department.

Very truly and respectfully yours, R. C. TERRY & Co.

STATEMENT OF THE PACIFIC INK FACTORY, OF SAN FRANCISCO.

ROB'T BECK, ESQ., *Secretary California State Agricultural Society:*

DEAR SIR: In answer to yours of the twenty-third ultimo, requiring us, "as competitors for the gold medal premium, in the fourth department, to file with you a written statement, giving our reasons why the gold medal should be awarded us," we beg leave to say:

First—We claim that our inks, mucilage, and liquid blueing are superior to any imported.

Second—The *Alta*, in eighteen hundred and sixty-nine, estimated that upwards of one million of dollars per annum was sent out of the State to pay for imported inks alone, all of which we expect to stop within the next twelve months, by furnishing a better article at less price.

Third—We expect not only to supply the region heretofore supplied from San Francisco, but shall shortly commence exporting to the Southern and Western States; and as we are enabled to manufacture inks here cheaper than they can be manufactured in New York and Boston, we have no doubt but their exportation will be profitable to us and advantageous to the State.

Fourth—The inks imported into this market come from New York, Boston, Philadelphia, London, Paris, and Berlin; there are no other ink manufactories of any note, in the world, other than those named, and the establishment here, upon the shores of the Pacific, of an ink factory, supplying the world with inks superior to any other, should be a source of pride to Californians, and the Managers of the State Fair are in duty bound to do all in their power to bring about this great desideratum.

Fifth—Our establishment, directly and indirectly, gives employment to a large number of men. Our bills, for printing labels alone, amounting to some two hundred dollars per month, and continually on the increase.

Sixth—The announcement in the public newspapers, that the California State Fair had awarded us the gold medal, would give our manufactures a status abroad that would be of great pecuniary advantage to us and of permanent benefit to the State.

Hoping that your committee will examine the matter thoroughly, and conclude that our manufactures, being of great importance to the State, and as we have never before applied for or received a medal, and that as the advancement of a home industry is the enrichment of our whole people, will, in your good judgment, award us the medal,

We remain, your most obedient, KNOWLTON & HARRIS.

STATEMENT OF NICHOLS, FALVY & CO., OF SACRAMENTO.

To the Gold Medal Committee of eighteen hundred and seventy:

GENTLEMEN: We enter our claim for the gold medal in the fourth department, and think that we are entitled to it for the following reasons: that our goods (pails, tubs, and woodenware), being entirely and exclusively of home manufacture, are entitled to and deserving of more credit

than any other display in the same department; that ours is an industry which, if properly fostered and encouraged, will grow to be of great extent, keeping money in the State that would otherwise go out of it; that although there may have been more brilliant displays in this department than ours, there were none of goods that required so large an outlay of capital and time to produce them. Hoping the committee will acknowledge the justness of our claim, we remain, gentlemen,

Your obedient servants, NICHOLS, FALVY & CO.

STATEMENT OF HUNTINGTON, HOPKINS & CO., OF SACRAMENTO.

To the Committee for Awarding the Gold Medal Premium:

GENTLEMEN: As competitors for the gold medal premium, we claim that it should be awarded to us for making the largest and most meritorious display of goods in the fourth department, having on exhibition a full and complete assortment of hardware, house furnishing goods, and railway supplies, comprising between nineteen hundred and two thousand different pieces, and valued at six thousand five hundred dollars.

Yours truly, HUNTINGTON, HOPKINS & CO.

FIFTH DEPARTMENT.

STATEMENT OF THE SACRAMENTO VALLEY BEET SUGAR COMPANY, OF SACRAMENTO.

To the Gold Medal Committee of the State Agricultural Society for the year eighteen hundred and seventy:

GENTLEMEN: The Sacramento Valley Beet Sugar Company was organized in March, eighteen hundred and sixty-eight, for the purpose of purchasing lands, raising beets, and manufacturing beet sugar. The company was duly incorporated April twenty-fourth, eighteen hundred and sixty-eight, with a capital of one hundred thousand dollars, and all its capital stock was subscribed by citizens of Sacramento.

An agent was sent by the company to Europe in May, eighteen hundred and sixty-eight, who was authorized to proceed, at the expense of the company, and examine into and report upon the condition of beet sugar manufacture. This agent was absent several months, visiting the most important sugar districts of Germany and France. On his return he made a lengthy report to the company, which was published and gratuitously distributed among those interested in beet culture and sugar manufacture.

In the meanwhile, a tract of land of about three hundred and sixty acres was purchased near the City of Sacramento, and immediate steps were taken to procure seed from Europe suitable for the production of

sugar bearing beets. A quantity of the seed was planted, and with the beets grown therefrom the first beet sugar ever made in California was produced in the factory of the Sacramento Valley Beet Sugar Company, and a sample thereof exhibited at the Fair of the State Agricultural Society in the year eighteen hundred and seventy.

During this year, some sixty acres of beets were planted on the ground of this company, and in June steps were taken to get machinery in operation in time to make sugar when the beet crop was fully matured. There was, however, considerable delay in getting the machinery, and before it could be finished and put up in complete working order, the beet crop had commenced a second growth, and they had lost a large proportion of their sugar properties. The result has been that the percentage of yield in sugar has not been so satisfactory as could be desired and as was expected while the beets were growing.

The company are making preparations for sowing a large breadth of land the coming season, and are confident of producing results that will be satisfactory to the stockholders, and be the means of establishing an industry in California of the utmost importance. These facts are submitted to your committee, and we solicit at your hands the bestowal of the gold medal offered by the State Agricultural Society for the most important exhibit in the department to which beet sugar belongs. We ask for this gold medal upon the following grounds:

First—The Sacramento Valley Beet Sugar Company was the first company to organize in the State for the manufacture of beet sugar.

Second—This company has been expending large amounts to get the best information available in this country and Europe, and have made experiments in beet culture in California, the results of which will be of great importance to those who prosecute the business hereafter.

Third—This company are the pioneers in an industry that is destined to become one of vast importance to California, and in which a large amount of capital will eventually be invested.

All of which is respectfully submitted.

W. E. BROWN,
President of the Sacramento Valley Beet Sugar Company.

SUPPLEMENTAL STATEMENT.

GENTLEMEN: We have been making several practical tests in the matter of making sugar from beets grown upon our lands near Brighton. The results convince us that the second growth which the beets have taken within the last six weeks has very materially reduced the quantity of sugar contained in them. In the manufacture of some thousand pounds of sugar we find that the yield of sugar and syrup has been but about eight per cent of the beets used, the same being weighed after the shank or waste was trimmed off. As but about sixty per cent of this result would be sugar, it will be seen that the yield of sugar would be but four to five per cent of the weight of trimmed beets; whereas, with proper cultivation, they should yield at least eight per cent of sugar.

Some portions of our machinery are capable of running through thirty tons of beets in twenty-four hours, and if we should increase the other portions to an equal capacity, and had beets that would yield eight per cent of sugar, we should undoubtedly arrive at results something like the following:

EXPENSES.	
Thirty tons of beets, at five dollars per ton	$150 00
Six cords of wood for engine, at three dollars	18 00
Thirty-one Chinamen, at eighty cents per day	24 80
Eight men for boiling, etc., at two dollars per day	16 00
Three engineers, eight hours each, at three dollars per day	9 00
Team work, etc	13 00
Bone black, etc	15 00
Superintendent	7 00
Reboiling syrup	20 00
	$272 80
CONTRA.	
Sixty thousand pounds beets yielding eight per cent of sugar would be forty-eight hundred pounds, at eight cents	$384 00
Sale of beet clippings, for feed, six tons, at two dollars and a half	15 00
	$399 00
RECAPITULATION.	
Yield of one day's work	$399 00
Cost of production	272 80
	$126 20

This result would give a net profit of $126 20 per day, without estimating the value of the syrup produced, or of the large quantity of pulp left after the beets are worked through the centrifugals.

All of which is respectfully submitted.

W. E. BROWN,
President S. V. B. S. Company.

STATEMENT OF ROBERT WILLIAMSON, OF SACRAMENTO.

To the Board of Judges of the State Agricultural Fair for the year eighteen hundred and seventy:

GENTLEMEN: As a competitor for the gold medal in the fifth department, I claim—

First—That the articles exhibited by me are among the actual necessities of life, and also among the chief products of the country, and form a very important part of our agricultural and commercial interests.

Second—I claim to have exhibited a greater variety of products than any one exhibitor in said department.

Very respectfully, ROBERT WILLIAMSON.

STATEMENT OF ORLEANS HILL VINICULTURAL ASSOCIATION, OF SACRAMENTO.

To the Committee on Gold Medals:

GENTLEMEN: The history of grape culture and the manufacture of wine is too well known and written up to require comment from us. The benefits to the country and to this State are well understood by you. You are well aware of the fact, that we have in this State thousands of acres of land of but little value for any other purpose, and yet when put under cultivation in the grape are rendered of equal, if not greater value than any other lands, even the best wheat and orchard lands. In twenty years from this time this industry will, in our opinion, if properly encouraged, be of greater value to the State than any other. The Orleans Hill Vinicultural Association are fostering this industry to their utmost ability, and this fact we urge as a reason why we are entitled to the gold medal in this department. We also claim the medal for the reason that we have this year exhibited at the State Fair the greatest variety of uniformly good wines, and obtained for them the greatest number of premiums and special awards. We therefore ask at your hands the gold medal for wines.

Respectfully,

ORLEANS HILL VINICULTURAL ASSOCIATION,

By CARL STROBEL, Secretary.

STATEMENT OF B. N. BUGBEY.

To the Committee State Agricultural Society awarding Department Gold Medals:

GENTLEMEN: The undersigned, an exhibitor in the late State Fair at Sacramento, claims the award of the gold medal in the fifth department, for the following reasons:

First—That wines and brandies are the most valuable and important in the list of articles competing for the gold medal in this department, the value of the product of grapes being the third leading agricultural product of the State; also, that it is more important to foster the wine producing interest than any other in the fifth department of the late State Fair, as giving greater employment and increased value to land and labor than any other in proportion to the capital invested.

Second—That the undersigned, as an exhibitor, has made the largest and more valuable exhibit of wines and brandies produced from foreign varieties of grapes—all of excellent flavor; thereby showing conclusively the capacity of our soil and climate to produce successfully the finer wines of France, Germany, Spain, and other wine countries of Europe. This result has been effected through great care and expense, extending over a period of nearly ten years, and is destined to have an important and favorable influence in competing with the finer varieties of wines which have heretofore been imported from Europe. The under-

signed claims that he has produced as fine qualities of wines from the different varieties of grapes used as can be had—age and other circumstances considered—anywhere, and that the result thus attained he has made the common property of all other viniculturists in the State.

I am yours, truly, BENJ. N. BUGBEY,
Per H. D. D.

SIXTH DEPARTMENT.

STATEMENT OF T. K. STEWART, OF SACRAMENTO.

To the Committee on Gold Medals, at the Fair of eighteen hundred and seventy:

Gentlemen: As an applicant for the gold medal, to be awarded by your committee for the most meritorious exhibition in the sixth department, I beg leave to submit to you the following facts for your consideration: I came into the State in eighteen hundred and forty-eight, and in the following November I settled where I now live, on the American river, within the present limits of Sacramento. Having brought with me a supply of garden seeds of various kinds, and apple seed, pear seed, and peach pits, etc., to the amount of about two hundred pounds, I planted them all in the following Spring, and in the Summer of eighteen hundred and forty-nine succeeded in producing a very fair crop of nearly every variety of vegetables; such as corn, beans, beets, potatoes, peas, melons, etc. I also planted the peach pits, apple and pear seeds, all of which came up well; but during the warm, dry season, not having any facilities for irrigation, and not knowing much of the peculiarities of the climate, a large number were killed by the drought; I succeeded, however, in keeping alive and raising some half dozen pear and apple trees, and a dozen peach trees. I also, the same Spring, planted a few fig and olive trees, and succeeded in raising one of each. At the late State Fair I exhibited from these trees, now over twenty years old, apples, pears, figs, and olives. As early as eighteen hundred and fifty-one, desirous of testing the question, whether the climate was adapted to the successful production and maturing of oranges, I obtained some orange seed and planted them, and the sweet oranges exhibited by me at the Fair were from the trees then planted. Finding, from this early beginning, that the climate was favorable to the growth of the various kinds of fruit trees, I was encouraged to extend my experiments in this direction, and in eighteen hundred and fifty-five, with a view to supply myself with the stock necessary for a more extensive orchard, I planted out a nursery of about one acre in extent, and embracing nearly all the varieties of the most useful fruits now produced in the State. From this nursery I supplied many of my neighbors with trees for a beginning in the fruit business, reserving for my own use a sufficient number to plant some twenty acres, which is the size of my present orchard and vineyard, and which is in a good bearing condition.

My exhibition at the Fair embraced a large number of varieties of apples, pears, plums, oranges, figs, grapes, and olives. For oranges and

olives I received respectively the first premiums. In fact, my exhibition contained all of these excellent fruits at the Fair, and for this reason I claim special merit, and trust the committee will appreciate my efforts to show the adaptability of the soil and climate of this part of the State to their cultivation. I also claim for my exhibition special merit on the ground of my early beginning in this important industry and the many early experiments made by me at a time when the minds of nearly all the people of California were turned toward the mines, and agricultural and horticultural pursuits were considered of but little account. While others were digging out the precious metals, to be shipped from the State in payment for the agricultural and horticultural products of other countries imported, I was thus early laying the foundation of an industry which was in time to check the export of gold from the State and develop her most valuable and lasting resources. It is true that my commencement was small and seemingly insignificant, but all great and valuable enterprises have their small beginnings, and should be measured and adjudged by their results. My experiments and efforts have been continuous from the Spring of eighteen hundred and forty-nine, when my seed were planted, to the present time; and while from my location the floods have done me much damage and thus retarded my operations and prevented their extension, so that some others who commenced at a later day have larger orchards and more extensive establishments, still they have all had the advantages afforded them by my pioneer experiments. From this small beginning fruit culture in this portion of the State has continued to develop, until it is now becoming one of the most important industries of the country. If the committee, in making up their decision, take into consideration the risks run and obstacles met and to be overcome by the pioneers in new and untried fields of industry, as I think they should, then I trust that my exhibition is at least entitled to a fair share of consideration, and I shall hope to receive the award of the gold medal for the sixth department.

Very respectfully, your obedient servant,

THOMAS K. STEWART.

STATEMENT OF J. R. NICKESON, OF PLACER COUNTY.

To the Committee on Gold Medals for eighteen hundred and seventy:

GENTLEMEN: In coming before you as an applicant for the gold medal in the sixth department, I desire in the first place to state that I shall presume that in determining the degree of merit to which an exhibition is entitled, you will not only look at the exhibition itself, but will take into consideration any and all relevant circumstances tending to affect that question either for or against the exhibitor. My statement will be made upon this presumption, and I hope the exhibition may be judged of accordingly.

I will premise then by saying that since the existence of the State Agricultural Society I have been one of its constant, and I may in truth say, one of its principal supporters. Whatever has tended to increase its interest, or extend its influence and usefulness, has been a subject of lively interest with me, and has received my active and substantial support. So constant have been my exhibitions at the Fairs of the society

that the officers have come to regard an exhibition from me as certain as the Fair itself, and in fact I would almost as soon think of omitting to gather my annual crops as to exhibit samples of them at the Fairs of the State Society. If all the farmers of this State were to take, or had taken in the past, the same degree of interest in the society, how different would have been her position to-day, and how much more extensive and important would have been the agricultural industries of the State.

My exhibition this year was but a repetition of those made by me each year for ten years past, and embraced the following number of varieties of the different kinds of fruit: of grapes, two hundred and fifty-five varieties; of apples, two hundred and seventy-six varieties; of pears, eighty varieties; of peaches, thirty-five varieties; of plums, twenty-five varieties; of figs, eight varieties; of English walnuts, one variety; of almonds, one; of pomegranates, one; and of quinces, eight varieties; making in all seven hundred and twenty varieties of fruits exhibited by me. And I here state as a fact, that my exhibition of fruit embraced a greater quantity, and a greater number of varieties, than all other exhibitions combined. It gives me pain instead of pleasure that such is the fact, for it tells too emphatically of the negligence and indifference existing among the fruit growers of California with reference to an industry of such vital importance.

In addition to the above exhibition of green fruits, I exhibited dried fruits as follows: one variety of raisins; five varieties of figs; five of prunes; three of peaches; one of nectarines; one of pears; and eight of plums. I am sorry to be compelled to state that in this branch of the fruit exhibition, mine embraced more varieties than those of all other exhibitors. Too much cannot be said or done to induce our fruit growers to enter into the business of drying fruit. Thousands of bushels of every variety of fruits go to waste annually that might be made to net a handsome profit to the producers if they would take the trouble to dry them; and the wages of the labor necessary to perform this work would contribute to the comfort and happiness of thousands of needy families. I make it a point in the management of my orchards and vineyards to allow nothing to go to waste that will pay for the labor necessary to take care of it; and my object in exhibiting dried fruits, was to wake up an interest in this particular department of fruit culture, and try and save to our State annually a large income which, under the present management, is entirely lost.

Besides the above exhibition of fruits, green and dried, I had at the Fair eighteen distinct varieties or samples of wine, and one of brandy. These, although not fruit, are the result or product of fruit, and may well be taken into consideration in making a decision on the merit of an exhibition. I will state for the convenience of the committee that I was awarded for my exhibition the two highest premiums offered in the sixth department, viz: "For the best general display of fruits, embracing best and greatest varieties, twenty-five dollars." Also for "greatest number of varieties and best specimens of foreign grapes, three bunches each, twenty-five dollars." I was also awarded the first premium for the greatest number and varieties and best specimens of figs, five dollars," being more than was awarded to any other exhibitor in the same department. This award alone, being made by a competent and critical committee, should be decisive as to the merit of the exhibitions.

There are, however, other considerations which tend to invest my

exhibition with more than ordinary interest, and which may contribute to its merit. The first of these is found in the great number of varieties of the different kinds of fruit exhibited. There are in fact but a few varieties of fruits, comparatively speaking, profitable to cultivate in California. My object in producing so many varieties has been to determine the best varieties for my own benefit. My object in exhibiting them was to give others and the public at large the benefit of my experience. To produce so many varieties for the purpose above named has cost me a large amount of money, and the benefits accruing are as much the property of others as of myself. Again, the location of my place is in the foothills of the Sierra Nevada Mountains, and my success in that locality goes to show that those foothills are as well if not better adapted to the cultivation of all the varieties of fruit and wines than any portion of the valleys of the State. There are thousands of locations in these foothills just as favorable for entering into the fruit and wine business as my own, and the land can be had at the government price. The tendency and object of my exhibition is to call attention to these facts, and thus to benefit the State and the people who may be induced to take advantage of them.

With these considerations I beg leave to place my claim in your hands, and abide the result.

Respectfully, J. R. NICKESON.

STATEMENT OF E. F. AIKEN, OF SACRAMENTO.

To the Committee on Awards of the Gold Medals:

GENTLEMEN: The object of the Directors of the Agricultural Society in offering gold medals for the most meritorious exhibit in the different departments is without doubt to encourage and stimulate those interested in the several departments to such productions and manufactures at home as will eventually put a stop to the immense drain of coin from the State to pay for articles imported, thereby keeping our coin at home and creating new industries, which will give employment to hundreds and thousands now coming to our State from the East.

Mrs. Aiken respectfully presents her claim for the gold medal in the sixth department, in behalf of an interest destined to be one of the most important of the agricultural interests of the State, viz: dried fruits, prunes and raisins. These interests were honorably represented by Mrs. Aiken at the late Fair, the committee awarding her five premiums and two diplomas for the exhibit of fruits and raisins; the raisins and prunes receiving especial mention as being equal if not superior to the imported articles.

Many of the best varieties of fruits in the Atlantic States are gradually but surely decreasing in quantity and quality. The best varieties of cherry trees throughout the Eastern and Middle States are being rapidly decimated by a disease called the "black knot," and the cultivation of plums and prunes is almost discontinued on account of the curculio; these insects often destroying every plum and nectarine on the trees. No remedy has yet been discovered that has proved effectual. California, thus far, has escaped the ravages of insects and diseases peculiar to the Atlantic States, and with her incomparable climate, combined

with the skill and industry of her horticulturists, is proving, beyond a question, to be one of the best fruit growing countries in the world. The area of our territory is such that we have a diversified climate, which enables us to produce fruits of all climes worthy of cultivation, from the apple and pear of our Northern homes to the orange, the lime, and the olive of the tropics.

The quality of our fruits cannot be excelled; and they are now being produced throughout our State in such quantities as to far more than equal home consumption. Our fruit raisers are beginning to realize that we have a climate with peculiar advantages for drying fruits and making raisins, and have already demonstrated that this industry can be made a paying one to themselves, and of immense value to the State.

The process of making raisins and prunes is simple. The prunes are picked when fully matured, and exposed to the sun (spread on boards or tables prepared for the purpose) for several days, turning occasionally; and when dried sufficiently they are taken and dipped in water to moisten them. They are then placed in a hot oven on shallow pans for a few minutes, until thoroughly heated, to start the sugar in them. They are then spread again to cool, and when cool and dry are ready to be packed down for market. Raisins are made in a similar manner, with the exception that they require no fire heat.

For want of proper statistics I am unable to state the amount of money paid annually for dried fruits and raisins imported into the State; but it will be safe to say that we are paying more than a million and a half of dollars to other countries for what we have in abundance within our own boundaries. How much better, then, for the interests of our fruit growers, and the State at large, when we can produce enough of the above mentioned articles to meet the call for home consumption, thereby retaining at home the immense sums of money sent abroad annually to pay those who do supply the demand. This state of things cannot remain so long. We shall soon be able to supply the whole Pacific Coast with all varieties of dried fruits, and have a large surplus to export to the Atlantic States.

The foregoing statement of this new interest among us (which, without doubt, is justly entitled to the gold medal) is most respectfully submitted for your consideration.

ED. F. AIKEN.

SEVENTH DEPARTMENT.

STATEMENT OF JACOB ZECH, OF SAN FRANCISCO.

To the Gold Medal Committee:

In compliance with requirement of exhibitors to file written statement of claim, I beg to submit the following reasons for claiming a gold medal in the seventh department—fine arts:

First—My pianos are entirely of California manufacture, are of superior workmanship, are fully as good, if not superior in tone and finish, to any imported pianos, and are unqualifiedly superior to the imported

article, in having all the woodwork preserved against the trying influences of this climate by the injection into the pores of the wood of the vapors of hydro-carbon oils.

Second—I have since the first commencement of my manufacturing here, in eighteen hundred and fifty-six, made and sold five hundred and sixty pianos, all a California production. The enterprise is beset with bitter competition from importers and agents of Eastern and European manufactures, and requires from organized public California societies some substantial acknowledgment of the excellence of the piano produced at home, in order to enable me to make head against the fashion of admiring a piano in proportion to the distance from California of the place of its manufacture.

Third—From sixty to seventy pianos are imported into California and sold monthly. This business, which would employ one hundred and twenty hands, might in a short time, as I have stated before, be all secured here; we would turn out pianos equal in all respects to the imported ones, and superior in the quality and durability of the wood used. To accomplish this result of building up home industry is the point at which we are both aiming.

Fourth—As the last and most powerful reason in support of my claim to the gold medal in the seventh department—fine arts—I assert that in my pianos I have exhibited the most meritorious article in department seventh, and rely on the report of the committee on this class in support of this assertion.

I remain, respectfully yours, JACOB ZECH.

STATEMENT OF AITKEN & LUCE.

To the Committee on Gold Medals:

GENTLEMEN: We herewith file our reasons for claiming the gold medal in the seventh department.

First—We claim it because we had the largest collection of marble work, greatest variety, and worth more money than any in our line. We had the best sculpture and more of it than has ever been exhibited in the State Fair by any one firm. For the best sculpture we refer, first, to a "spread wing dove;" second, to an original design for a child's monument, with tablet resting on a pile of rocks, with a lamb resting in perfect repose in front. As works of art they have not been excelled in the State. Our exhibition consisted of five monuments of unquestioned proportion, four pieces of sculpture, and one marble table, the whole in California marble, thus demonstrating the fact that we have within ourselves the material for any purpose for which marble is used.

Second—Because we have labored almost exclusively for the last thirteen years to develop California resources, and have finally succeeded in producing a quality of marble that has no superior in this or any other country, it being more free from flint or iron, finer and more compact, stronger and capable of more "relief" than either Italian or Vermont.

Third—By such developments we will save more money in the State than any other branch of fine arts.

Fourth—That in bringing about this result we have been unaided by any except our own labor, and the acknowledged worth of the mate-

rial produced having thus far overcome all the discouragements naturally attendant on all new enterprises in new countries.

Fifth—We are supplying not only large portions of our own State but also a large portion of the marble that is used in Oregon. And by receiving the fostering care and encouragement which its importance demands, we hope to extend the demand for California marble until the whole Pacific Coast and the "Islands of the Sea" shall pay tribute towards the general wealth of the State, and thus give employment to hundreds of our own people.

The importance of the development of our marble quarries can scarcely be realized, except by persons who have paid some attention to this particular branch of industry. The development of quarries of equal quality within the same distance of New York that these are from San Francisco would add millions to the wealth of that State, and it only requires time to produce the same results here.

We have expended several thousand dollars in improvements and machinery in developing it.

For the above reasons we submit our claims, hoping you will appreciate our efforts in building up the real interests of the State, as well as cultivating a love for the beautiful, by awarding to us the gold medal for the seventh department.

AITKEN & LUCE.

Sacramento, October 15th, 1870.

STATEMENT OF S. W. SHAW.

Robert Beck, Esq., *Secretary State Board of Agriculture:*

Dear Sir: Your letter of September twenty-second, informing me that the Board required from all competitors for the gold medal premiums at their late Fair a written statement, giving their reasons why these premiums should be awarded them, was duly received. While this requirement seems to me eminently just and proper, and calculated to elicit a fund of valuable information in every department of agriculture, it does not seem hardly the right thing for an artist to attempt to set forth what he deems his own merits.

Art has been considered in all ages worthy of the patronage and encouragement of the State. Wherever it has flourished it has ever been referred to as evidence of prosperity, high culture, and refinement among the people. In a State like ours, so far removed from all the great commercial centers, the devotee of art labors under peculiar disadvantages. There being no art societies or galleries for the exhibition of their works, they are compelled to exhibit in shop windows or avail of such other opportunities as are offered. Seeing this want in a new State, the founders of the State Agricultural Society very commendably established a department of art, and set apart certain moneys to be awarded as premiums—the value of a premium not being the cash value of the thing received, but the stamp upon it, declaring the receiver worthy.

The gold medal of the State Agricultural Society being a prize worthy, and calculated to stimulate to higher efforts not only the recipient but all others who are striving for excellence, if justly bestowed; feeling confident that your honorable body fully intended to deal

impartially with all competitors, I placed in your Hall at your late Fair eight oil paintings, all properly belonging to one department of art—that the most difficult known—that of portraiture. Most of these paintings have been examined by the best connoisseurs we have in the State, and pronounced true works of art and worthy of any gallery in the world. None are perfect, and we are all liable to feel a partiality for ourselves. Making all allowance for this partiality, I feel that my exhibit justly entitles me to the award.

With this statement I leave my case with the enlightened Board of Agriculture, feeling confident that they will render impartial justice.

Very truly, your obedient servant, S. W. SHAW.

STATEMENT OF HOWARD CAMPION, OF SACRAMENTO.

To the Committee on Gold Medals, State Board of Agrieulture:

GENTLEMEN: In accordance with circular of September twenty-second, I beg leave to lay before you the following reasons why I should receive the gold medal premium to be awarded for the best collection of paintings:

First—I had the finest oil paintings on exhibition, consisting of one animal painting of a doe and fawn, life size, which has been highly complimented by both the leading journals of San Francisco and this place. I claim this to be the finest and most attractive oil painting on exhibition.

Second—Seven portraits in oils, one of which was the portrait of the Hon. E. J. Lewis, which took the first premium as the best portrait on exhibition; three landscape paintings, consisting of Cascade Lake, Carson Valley; Emerald Bay, Lake Bigler, and two flower paintings. Total number of oil paintings—thirteen.

I claim for the above the kind attention of the honorable committee, and feel that they will award "merit to whom merit is due."

HOWARD CAMPION.

STATEMENT OF D. H. WOODS.

Gentlemen of the Gold Medal Committee:

I have received notice from your Secretary that you require competitors for gold medal premiums to file statement in writing, setting forth their claims to said medals. In complying with your rule, I will confine myself to the reasons why I think the medal for the —— class should be awarded to an artist, instead of a manufacturer.

First—The works of artists form a more attractive feature of the exhibitions.

Second—The outlay of time necessary to make a creditable display, for which the artist can hope for no adequate remuneration except the prizes, and the influence they exert upon his future business; while the manufacturer's wares have a fixed value, in accordance with the cost of production.

Third—The long years the artist must give to his studies, without remuneration, in order to fit himself to make a creditable display of original paintings.

In regard to my own claims, I merely call your attention to the large space I filled, including portrait, landscape, animal, and still life painting; also, to the award of the committee on that class of works at the late Fair.

Respectfully submitted, D. H. WOODS.

STATEMENT OF MRS. W. E. BROWN, OF SACRAMENTO.

Major Beck, Secretary:

DEAR SIR: In reply to your kind favor of the twenty-second, requesting my "reasons why I should be awarded the gold medal in the seventh department, as to what claims I have as a competitor," etc., delicacy would lead me to answer that my works must speak for themselves. In an artistic point of view I believe such an encouragement as the bestowal of that premium would prove an incentive to further progress on my part to become worthy the proud title of "California artist," which your committee have been pleased to designate me, as we all need some little encouragement, and more than a passing notice for continued efforts. Now for the facts of the case. I have spent much time last year amid our wild mountain scenery, working with colors on the spot, and feel that I have some fine studies, which for one self-taught, my friends are kind enough to say have compared very favorably with skilled professionals. And even at your last year's exhibition, hanging side by side with those of a neighboring artist, my pictures were favorably mentioned in three different criticisms in connection with those referred to; which, although quite flattering to me, that my efforts could be and had been mistaken, and counted in with those of a professional, thereby increasing the merit of his display, for which two premiums were awarded, and I feel well bestowed. Yet that triumph was not so great an encouragement as a premium, however trifling, from your honorable Board, to inspire me to further progress. Perhaps you think as on several occasions I have taken the first prize for fruit and flowers, I am encroaching on the rights of legitimate artists in presuming to compete for the highest prize. Yet to the earnest worker for and lover of art, the goal will be reached in view of all discouragements. And thus I leave my fate in your hands.

Very respectfully, MRS. WM. E. BROWN.

STATEMENT OF J. C. DEVINE & BRO., OF SACRAMENTO.

To the Committee on Gold Medals of the State Agricultural Society:

GENTLEMEN: We, the undersigned, as competitors in the sixth and seventh departments of the recent Fair, having made the most meritorious exhibition in those departments (for which we received the two

first premiums), hereby most respectfully file our claim for the gold medal, and base our claim on the following facts:

First—All work exhibited by us is of our own manufacture, and has been under the direction of no other person.

Second—That after due consideration for business we will abundantly prove that our sole aim has always been to perfect and elevate our business in California by trying to emulate the most celebrated sculptors, and by creating a friendly rivalry among other manufacturers.

Third—That our large monument built of Italian blue or veined marble is of the highest standard of architectural beauty and finish, and is also of original design, the product of our own brains. That we will pit the aforesaid piece of workmanship against anything of marble work of its nature in the State. Its style of architecture is the Ionic, though somewhat relieved by a composite architecture greatly heightening the brilliancy and effect of its appearance. Its projections are so accurate, and the relieved work so small and fine, that we claim for it the name of "masterpiece." We began this piece of work in March last, expecting to have more competitors, and advance the idea that inasmuch as that the work was executed solely with a view to competition and not for merchandise, our claim is thereby enhanced. The cost of labor upon it was seven hundred dollars.

Fourth—Our Gothic tombstone, with shield and wreath of flowers, we claim to be as true to nature as any that can be hewn from marble in this or any other country. The wreath consists of an interlaced circle of immortelles and lilies (a peculiarly difficult flower to cut), and is finished in the highest style of art.

Fifth—Our scroll, with sleeping infant, is, from the very peculiar nature of the material from which it is cut, a most praiseworthy production. We append the following extract from the *Sacramento Reporter* of April eighteenth last:

"In dropping into the marble works of the Devine Brothers we were highly pleased by the inspection of a sleeping baby on couch, by the beautiful proportion of the limbs and accuracy of expression, which makes it compare favorably with the best masters, and was executed by Mr. J. C. Devine's own hand, as an actual occurrence."

Sixth—Our modern style chimney piece and mantel is cut from Italian statuary marble, and is provided with side trusses; on each front side is cut a fruit piece in bold relief, surrounded and entwined with the grapevine and leaf, which for accuracy and perfect finish we challenge the Pacific Coast.

Seventh—This statuette, strictly speaking, comes under the head of the sixth department, and we trust will serve to show what care and time, combined with genius, may do. It is an allegorical representation of Virtue and Innocence, and fearing that in describing it we would overstep the bounds of modesty, we most respectfully ask that, if consistent with convenience, the committee will call upon us at our works and examine it in person.

Eighth—We are young mechanics who, in an honorable desire to excel, have given our care, time, and means for the advancement of our business on this coast, and hope by your encouragement to persevere until it shall be truly said California excels in marble work and statuary, as

our last Fair has abundantly proven she does in all other arts and industries.

All of which is most respectfully submitted by your humble servants,

J. C. DEVINE & BRO.

ADDENDA.

We view with regret the fact that mines or leads of marble in this State are but poorly developed. We have ourselves inspected the various mines in Amador and Placer Counties, and are of opinion that none of it, in qualities most essential for working, equals the Cararra marble. We are satisfied that with the necessary encouragement from the State, marble quarries could be developed which would not only supply our own demands, but furnish material for exportation, thereby inaugurating another of the already long list of products for which our State has become famous.

Respectfully, your obedient servants,

J. C. DEVINE & BRO.,
Nos. 216 and 218 K street, between Seventh and Eighth,
Sacramento, California.

REPORT OF THE GOLD MEDAL COMMITTEE FOR 1870.

To the State Board of Agriculture:

GENTLEMEN: The committee appointed by your Board to award the gold medals offered by your Society for the most meritorious exhibition in each of the several departments of the last Fair, would report that they have examined the articles on exhibition and have read and considered the several claims filed by the different competitors, and have awarded the medals as follows:

SECOND DEPARTMENT.

William Sawdon—For California invented and manufactured sewing machine.

THIRD DEPARTMENT.

F. Foster—For California bookbinding.

FOURTH DEPARTMENT.

To Nichols, Falvy & Co.—For woodware (tubs, pails, etc.), California manufacture.

FIFTH DEPARTMENT.

To B. N. Bugbey—For California wines and brandies.

SIXTH DEPARTMENT.

To J. R. Nickerson—For exhibition of fruits of various kinds.

SEVENTH DEPARTMENT.

To Jacob Zech—For California manufactured pianos.

The Committee, in addition to the above, recommend the Board to award, if they can consistently do so, special gold medals to each of the following parties:

To John S. Finch—For ramie plant or fiber.
To John Bruener—For furniture.
To the Sacramento Valley Beet Sugar Company—For samples of beet sugar.
To S. W. Shaw—For oil paintings.

All of which is respectfully submitted.

H. L. NICHOLS,
B. B. REDDING,
J. F. HOUGHTON,
LEONARD GOSS.

STATISTICAL TABLES FOR 1869-70.

AS REPORTED TO THE SECRETARY OF THE STATE BOARD OF AGRICULTURE BY THE STATE SURVEYOR GENERAL.

TABLE OF STATISTICS FOR 1869–70.

Industrial and other statistical information for the years 1869–70, *as reported to the Surveyor General by the several County Assessors, embracing the entire State.*

COUNTIES.	Acres of Land Inclosed.....	Acres of Land Cultivated.....	WHEAT.		BARLEY.		Acres of Land Cultivated in 1870.....	Acres Wheat sown in 1870..	Acres of Barley sown in 1870.....
			Acres ...	Bushels..	Acres ...	Bushels..			
Alameda	91,328	117,763	65,991	1,017,031	36,030	525,670	117,763	65,990	36,630
Alpine	7,000	650	150	3,000	300	6,000	650	150	300
Amador	57,274	18,250	1,450	20,000	2,000	35,225	18,140	2,240	2,440
Butte	300,830	55,000	41,000	600,000	12,500	275,000	56,000	44,000	13,750
Calaveras	46,009	12,003	775	6,015	1,000	16,900	13,000	270	1,305
Colusa	175,000	200,000	30,000	500,000	16,870	330,000	150,000	25,000	10,000
Contra Costa.....	124,559	69,739	51,041	778,619	15,172	354,460	96,348	69,000	13,107
Del Norte.....	9,086	2,311	630	7,102	97	2,310	1,804	343	80
El Dorado	88,311	15,225	904	10,674	257	2,670	15,225	904	267
Fresno	16,375	19,280	3,650	52,370	7,340	136,800	19,865	4,768	6,473
Humboldt.....	35,241	13,576	1,127	33,940	562	28,371	13,800	1,250	745
Inyo	2,000	1,500	280	2,000	300	2,500	1,000	250	300
Kern	4,835	3,200	687	20,610	1,251	37,530	2,700	500	300
Klamath	4,890	1,935	180	4,700	70	900	2,100	200	100
Lake	59,596	10,739	4,704	334,049	47,030	152,438	12,000	5,000	4,900
Lassen	21,473	6,440	678	10,107	3,240	78,245	6,850	780	3,420
Los Angeles.....	25,400	35,600	2,600	60,400	11,000	330,000	47,000	300	16,000
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	24,325	5,500	935	4,000	1,900	4,950	5,600	960	2,000
Mendocino.....	190,000	80,000	25,000	300,000	15,600	200,000	84,000	26,000	16,000

Merced	145,000	90,000	60,000	450,000	18,000	216,000	98,000	62,000	19,000
Mono	4,525	1,200	299	3,881	601	13,209	1,300	310	620
Monterey	138,863	97,874	65,215	456,890	24,860	968,800	109,354	68,327	34,412
Napa	104,000	40,795	34,675	450,775	3,280	72,160	42,000	34,075	3,130
Nevada	12,643	6,120	.....	.....	.....	.....	6,112	.....	.....
Placer	78,175	29,635	10,000	130,000	2,206	33,000	26,000	9,000	2,000
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	276,485	73,957	8,980	128,315	30,044	600,156	69,700	9,805	36,178
San Bernardino	20,000	16,500	3,000	25,000	6,500	75,000	19,500	2,400	12,500
San Diego	8,700	17,000	2,000	3,800	3,200	7,000	16,000	2,100	3,300
San Francisco	13,420	2,000	5	1,000	103	2,550	3,282	8	90
San Joaquin	275,000	200,000	117,000	1,521,000	29,640	622,482	235,000	150,000	40,000
San Luis Obispo	98,710	17,682	7,013	153,270	1,255	51,168	18,000	7,100	1,300
San Mateo	150,000	85,000	15,000	450,000	15,000	500,000	85,000	15,000	15,000
Santa Barbara	45,002	42,006	5,988	8,786	10,546	210,920	44,000	5,900	11,000
Santa Clara	489,000	149,000	95,000	1,950,670	12,500	260,175	151,620	97,000	11,300
Santa Cruz	52,195	16,994	7,647	107,439	2,804	89,140	17,500	8,000	4,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	17,810	2,018	492	9,474	790	19,154	2,020	495	795
Siskiyou	65,840	24,680	7,210	134,890	1,972	51,442	26,000	8,000	2,000
Solano	276,429	245,684	125,310	1,827,642	12,560	376,800	250,000	128,000	13,500
Sonoma	450,679	247,520	124,275	1,864,125	16,200	324,160	248,520	125,000	16,500
Stanislaus	62,000	250,000	195,000	3,060,000	50,000	990,000	300,000	250,000	50,000
Sutter	150,100	74,943	49,300	788,869	18,525	461,125	83,627	54,086	20,221
Tehama	91,210	30,709	17,606	400,000	9,100	19,000	35,000	21,000	10,000
Trinity	15,273	4,284	1,287	11,576	150	2,995	5,633	2,200	200
Tulare	30,000	20,000	2,500	62,500	2,000	51,200	25,000	3,500	2,500
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	123,773	95,600	68,226	1,159,821	13,916	278,320	100,000	70,500	15,500
Yuba	85,700	47,300	8,200	116,850	13,520	229,300	52,800	8,755	14,860
Totals	4,564,064	2,596,612	1,263,010	19,041,190	471,785	9,045,225	2,634,813	1,390,466	466,963

TABLE OF STATISTICS—Continued.

COUNTIES.	OATS.		RYE.		CORN.		BUCKWHEAT.		PEAS.	
	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda	3,240	98,460	137	2,510	562	13,180	17	204	166	4,038
Alpine	200	5,000	10	200	35	1,500	10	200	20	400
Amador	10	250	.....	.....	1,050	20,240	4	80	15	340
Butte	700	10,000	700	14,700	300	11,000	.....	.....	70	1,400
Calaveras	19	72	Very little.	.....	250	6,780	.....	.....	A little for	private use.
Colusa	24	480	.....	.....	80	2,330	.....	.....	88	3
Contra Costa	1,803	48,805	60	1,700	74	960	.....	.....	20	340
Del Norte	624	15,800	1	15	8	160	.....	.....	140	2,651
El Dorado	97	332	50	409	10	320	.....	.....	.....	.....
Fresno	12	485	22	500	476	12,340	6	150	3	85
Humboldt	3,793	183,420	.....	.....	258	7,860	5	100	1,058	63,830
Inyo	25	300	10	50	325	3,000	3	15	1	10
Kern	.....	.....	.....	.....	406	14,221	.....	.....	.....	.....
Klamath	100	1,700	.....	.....	50	700	.....	.....	30	870
Lake	224	5,305	5	129	745	10,702	.....	.....	½	25
Lassen	1,246	35,138	48	882	18	619	.....	.....	.....	.....
Los Angeles	200	2,000	70	2,100	9,900	425,700	70	2,100	60	1,500
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	190	350	125	215	28	360	.....	.....	3	90
Mendocino	Cut for hay	.....	.....	.....	1,000	20,000	.....	.....	500	15,000

Merced					1,500	65,000				
Mono	136	3,937	4	48	12	165	4	72		
Monterey	839	33,500	20	750	319	8,200	20	510	244	7,180
Napa	1,000	32,000	20	320	1,425	45,600			4	55
Nevada					100	1,200				
Placer	Cut for hay.		50	500						
Plumas										
Sacramento	1,126	18,046	22	256	2,241	67,682	12	250	18	705
San Bernardino					2,500	60,500				
San Diego	30	765			500	10,000			20	875
San Francisco	138	4,190							7	105
San Joaquin			125	1,200	1,000	28,500			7	392
San Luis Obispo	485	17,646	25	529	3,940	166,760	26	546	42	816
San Mateo	10,000	300,000	40	800	50	1,400			200	4,000
Santa Barbara	800	5,039			10,289	262,225			50	350
Santa Clara	5,000	140,150	470	10,205	1,000	30,000	25	600	325	14,250
Santa Cruz	1,141	43,165	12	160	617	18,106	146	1,854		
Shasta										
Sierra	220	11,245								
Siskiyou	3,514	94,980	28	984	110	3,012	8	122	8	140
Solano	1,050	21,000			826	8,260				
Sonoma	11,200	280,620	195	3,256	3,860	100,360	6	108	30	1,516
Stanislaus					250	8,310				
Sutter	375	11,900			500	15,000				
Tehama	125	2,400			150	2,800				
Trinity	110	2,172			70	860				
Tulare	20	600	25	750	357	6,000			1	16
Tuolumne										
Yolo	98	800	62	930	320	2,880	5	130	60	175
Yuba	895	26,550	4	200	810	32,800			10	220
Totals	50,809	1,458,602	2,340	44,298	48,321	1,497,592	367	7,041	3,200½	121,377

TABLE OF STATISTICS—Continued.

COUNTIES.	PEANUTS.		BEANS.		CASTOR BEANS.		POTATOES.		SW'T POTATOES.	
	Acres.....	Pounds.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda	.....	.....	599	5,975	.....	.....	1,013	72,640	.....	.....
Alpine	.....	.....	10	200	.....	.....	150	12,000	.....	.....
Amador	2	480	30	340	.....	.....	140	9,540	8	1,450
Butte	20	42,000	50	1,400	.....	.....	150	21,300	40	4,000
Calaveras	.....	.....	10	300	.....	.....	70	6,200	3	150
Colusa	.....	.....	.....	.....	.....	.....	30	1,523	6	300
Contra Costa	.....	.....	160	3,000	.....	.....	88	8,350	.....	.....
Del Norte	.....	.....	5	140	.....	.....	138	20,865	.....	.....
El Dorado	.....	.....	18	410	.....	.....	20	2,190	.....	.....
Fresno	1	1,200	7	130	.....	.....	40	7,470	6	940
Humboldt	.....	.....	2	65	.....	.....	2,347	635,385	.....	.....
Inyo	.....	.....	6	60	.....	.....	10	20	.....	.....
Kern	2	3,000	25	750	.....	.....	30	4,200	5	500
Klamath	.....	.....	20	600	.....	.....	60	2,000	.....	.....
Lake	.....	.....	4	117	.....	.....	31	3,044	.....	.....
Lassen	.....	.....	2	42	.....	.....	31	6,480	.....	.....
Los Angeles	75	68,500	1,500	29,800	60	.....	1,300	111,800	120	9,000
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	.....	.....	4	140	.....	.....	54	2,400	5	100
Mendocino	.....	.....	.....	.....	.....	.....	3,000	450,000	.....	.....

Merced			65	2,080			60	8,250	40	2,800
Mono			4	70			60	3,920		
Monterey			976	47,300			2,254	224,700		
Napa			6	190			25	3,250		
Nevada							100	600		
Placer							180	15,212		
Plumas										
Sacramento	11	8,200	567	18,546			452	50,113	528	74,682
San Bernardino			50	1,300			40	4,500	14	1,700
San Diego			75	1,000			80	5,780	25	1,400
San Francisco			26	520			1,620	178,200	44	3,080
San Joaquin			25	1,312			250	23,150	6	992
San Luis Obispo	5	2,500	1,200	50,400	2	180	1,169	98,730	24	1,920
San Mateo			500	21,120			6,000	600,000		
Santa Barbara			7,092	143,840			900	18,000		
Santa Clara			729	15,950			1,250	105,400		
Santa Cruz			384	5,544			230	41,300	¼	5,000
Shasta										
Sierra							74	7,110		
Siskiyou			22	500			310	41,674		
Solano	3	1,500	16	320			250	12,000	23	690
Sonoma	4	3,000	30	540			5,600	260,300	5	260
Stanislaus			10	600						
Sutter	3	not weighed	70		75		38	3,000	61	4,800
Tehama	50	12,000	20	550			65	10,140	20	4,000
Trinity			12	195			180	14,965		
Tulare	1	320	8	100			53	5,000	27	1,375
Tuolumne										
Yolo	45	67,000	400	16,000			325	32,065	140	13,860
Yuba	6	9,000	130	3,100	100	150,000	140	14,560	22	2,300
Totals	228	218,760	14,870	374,546	237	150,180	30,407	3,161,356	1,172	134,699

TABLE OF STATISTICS—Continued.

COUNTIES.	ONIONS.		HAY.		FLAX.		HOPS.		TOBACCO.		BEETS.
	Acres.....	Bushels.....	Acres.....	Tons.....	Acres.....	Pounds.....	Acres.....	Pounds.....	Acres.....	Pounds.....	Tons.....
Alameda	293	25,108	7,465	12,474	375	68,600	5	1,870	.....	.....	1,295
Alpine	4	200	500	600	.....	.....	.....	.....	.....	.....	20
Amador	20	1,470	7,420	7,150	.....	.....	16	8,210	.....	.....	24
Butte	150	6,900	8,000	6,408	.....	.....	5	15,000	5	3,000	300
Calaveras	5	160	5,300	5,180	.....	.....	See written report		.....	.....	2
Colusa	.....	.....	3,000	10,300	.....	.....	.....	.....	2	1,000	.....
Contra Costa	26	3,220	13,881	18,612	2	2,000	.....	.....	.....	.....	1,198
Del Norte	.....	.....	524	706	.....	.....	.....	.....	.....	.....	13
El Dorado	.....	.....	5,479	4,199	.....	.....	.....	.....	.....	.....	.....
Fresno	2	275	1,260	1,670	.....	.....	.....	.....	.....	.....	15
Humboldt	3	285	2,780	5,635	.....	.....	.....	.....	.....	.....	140
Inyo	5	250	200	250	.....	.....	.....	.....	.....	.....	2
Kern	3	700	1,200	1,200	.....	.....	.....	5	.....	.....	24
Klamath	3	70	1,420	4,875	.....	.....	.....	.....	.....	.....	.....
Lake	⅛	40	3,565	5,781	.....	.....	.....	.....	.....	.....	56
Lassen	3	324	3,183	5,114	.....	.....	.....	.....	.....	.....	18
Los Angeles	65	8,100	1,600	4,700	1	.....	34	19,000	30	22,500	90
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	3	270	7,000	9,220	.....	.....	.....	.....	1	110	7
Mendocino	.....	.....	30,000	30,000	.....	.....	200	200,000	.....	.....	.....

Merced	20	2,200	10,315	10,315							
Mono	3	128	1,423	1,737							11
Monterey	600	3,500	2,150	4,400	60	18,000	72	1,550	40	31,400	35
Napa	4	600	8,720	11,300			15	16,000			85
Nevada	20	100	2,612	2,790			10	10,000			30
Placer			8,470	8,500							
Plumas											
Sacramento	470	42,915	20,731	16,001	12	7,200	253	271,934			265
San Bernardino	20	1,500	1,150	2,000							25
San Diego	10	325	1,600	3,000							17
San Francisco	47	1,410	1,300	1,950							3,500
San Joaquin	24	5,136	32,850	24,675			17	14,500			20
San Luis Obispo	26	2,912	3,761	7,316	37	12,318	2	1,000	3	895	46
San Mateo	125	12,500	15,000	21,000	300		25	12,525			2,000
Santa Barbara			6,091	18,273	250	13,350					80
Santa Clara	965	86,350	13,750	27,500			67	14,475	40	35,000	950
Santa Cruz			3,430	7,124	120	11,751	20	2,000			7
Shasta											
Sierra			5,805	5,519							13
Siskiyou	14	3,485	5,212	10,111							10
Solano	5	150	18,649	21,384	455	318,500					35
Sonoma	10	1,000	28,680	43,020			26	10,200			500
Stanislaus			9,400	7,536							
Sutter			10,000	15,000							
Tehama	10	3,050	5,500	6,700							7
Trinity	9	450	2,467	3,424							36
Tulare	2	150	2,000	3,000					2	325	10
Tuolumne											
Yolo	132	19,806	8,694	13,046			40	44,000			55
Yuba	30	5,460	13,065	9,357			34	30,060			28
Totals	3,131⅛	240,496	346,362	443,052	1,612	451,719	841	672,329	123	94,230	10,969

TABLE OF STATISTICS—Continued.

COUNTIES.	Tons of turnips	Tons of pumpkins and squashes	COTTON. Acres	COTTON. Pounds	Pounds of silk cocoons	Acres of broomcorn	Pounds of butter	Pounds of cheese	Pounds of wool	Pounds of honey
Alameda	32	1,280					75,355	4,218	215,775	3,320
Alpine	35	25					50,000	2,500	250,000	500
Amador	4	38			20	45	21,240	1,090	41,258	6,240
Butte	110	200				90	150,000	9,000	360,000	20,000
Calaveras	2	18				20	18,700	1,000	472,319	14,200
Colusa		2				10	32,117	500	900,000	2,640
Contra Costa	820	1,570					229,805	36,960	121,465	15,400
Del Norte	45	3					37,620		3,100	2,675
El Dorado							135,262	16,290	14,500	3,840
Fresno	6	335					15,650	2,000	436,700	14,375
Humboldt	21						72,340	1,875	26,000	3,650
Inyo	2	20					2,000			150
Kern	12	300				1	6,000		416,000	6,000
Klamath							3,000			460
Lake	4	2,021					29,728	53,381	48,856	3,550
Lassen	3	57					37,350	3,600	965	10
Los Angeles	16	2,200			1,000	70	30,500	11,000	1 202,260	118,800
Marin										
Mariposa	17	16					10,000	380	27,273	110
Mendocino							150,000	8,000	300,000	10,000

Merced	.....	200	.....	.....	.....	.....	11,500	1,800	631,713	20,300
Mono	9	12	.....	.....	.....	.....	28,050	3,750	5,100	50
Monterey	45	550	.....	.....	.....	12	111,400	1,613,000	536,290	53,000
Napa	34	240	.....	.....	.....	3	200,000	2,250	22,550	6,000
Nevada	40	35	.....	.....	600	20	10,300	1,000	.....	2,700
Placer	.....	20	.....	.....	.....	.....	6,350	2,500	7,600	16,000
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	79	2,624	.....	.....	1,500	178	254,200	23,060	295,565	24,073
San Bernardino	.....	750	.....	.....	.....	25	24,500	2,950	76,500	38,650
San Diego	25	750	.....	.....	40	3	6,450	4,500	75,000	1,500
San Francisco	2,300	75	.....	.....	.....	.....	11,500	16,000	.....	200
San Joaquin	25	40	.....	.....	.....	.....	240,000	20,000	157,860	2,500
San Luis Obispo	467	172	.....	.....	.....	½	296,400	327,425	498,760	22,160
San Mateo	.....	10	.....	.....	.....	.....	225,000	250,000	.....	1,500
Santa Barbara	47	395	.....	.....	450	.....	10,034	30,990	743,528	6,420
Santa Clara	93	2,175	.....	.....	375	.....	375,450	1,675,000	47,310	6,120
Santa Cruz	2	1,150	.....	.....	.....	.....	81,300	4,000	.....	1,260
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	39	8	.....	.....	.....	.....	65,200	12,500	.....	2,820
Siskiyou	22	64	.....	.....	.....	3	76,482	14,982	35,300	3,486
Solano	16	15	.....	.....	.....	.....	19,705	20,681	218,770	4,000
Sonoma	25	1,580	.....	.....	.....	.....	640,740	240,820	150,870	2,325
Stanislaus	.....	.....	.....	.....	.....	.....	6,650	1,800	1,146,000	150,000
Sutter	.....	.....	.....	.....	50	.....	70,000	5,800	117,792	.....
Tehama	5	12	.....	.....	.....	87	25,400	2,400	510,500	2,000
Trinity	126	87	.....	.....	.....	.....	19,500	600	9,000	800
Tulare	8	78	.....	.....	.....	3	8,150	2,000	872,670	1,100
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	50	675	.....	.....	.....	.....	170,000	1,200	205,940	9,500
Yuba	52	340	.....	.....	.....	10	63,000	4,400	67,000	4,270
Totals	4,643	20,142	.....	.....	4,035	580½	4,166,928	4,537,202	11,268,123	602,654

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of apple trees.	Number of peach trees.	Number of pear trees...	Number of plum trees.	Number of cherry trees.	Number of nectarine trees	Number of quince trees.	Number of apricot trees.	Number of fig trees	Number of lemon trees.
Alameda	86,615	13,595	35,568	21,264	28,780	962	1,992	3,566	1,015	38
Alpine.....	500	200	50	25	25	10	20	25	.....	.....
Amador	34,850	20,200	12,460	3,150	1,820	860	1,250	730	1,050	40
Butte.....	30,000	30,200	5,080	3,000	1,010	890	320	732	580	.....
Calaveras	21,900	16,400	5,360	3,100	1,166	728	52	.....	400	10
Colusa.....	500	500	300	100	100	50	50	100	200	.....
Contra Costa.....	34,842	18,845	8,696	3,481	3,025	284	1,584	732	686	35
Del Norte.....	9,218	206	504	527	347	15	20	5	6	2
El Dorado.....	87,864	41,611	10,636	5,719	2,511	753	982	596	839	2
Fresno.....	1,845	3,172	434	78	75	43	57	152	203	.....
Humboldt	49,150	520	971	2,185	1,275	10	95	20	5	3
Inyo	300	500	20	20	15	25	.....	25	10	.....
Kern	135	500	50	75	50	70	10	100	100	6
Klamath.....	3,200	1,600	200	400	105	61	43	37	.....	.....
Lake	10,365	5,023	965	884	424	110	121	95	86	.....
Lassen	4,232	2,395	332	434	59	27	71	163	.....	.....
Los Angeles.....	7,100	11,500	5,200	200	150	300	1,100	1,850	2,000	3,700
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	6,000	6,890	870	400	220	75	125	350	275	.....
Mendocino	5,000	20,000	2,000	1,800	1,200	100	100	100	.....	.....

Merced	20,000	16,000	3,200	1,400	375	160	85	480	640	75
Mono	500	126	4	90	.....	.....	.....	.....	.....	.....
Monterey	28,735	13,412	19,930	2,418	1,003	513	91	1,120	168	42
Napa	58,000	25,000	17,350	5,700	7,840	830	1,320	1,835	780	25
Nevada	21,370	10,865	3,500	2,460	1,456	660	465	1,008	341	.....
Placer	31,000	18,000	11,000	25,000	1,200	900	2,000	400	2,100	40
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	89,298	88,927	25,842	14,053	3,960	3,565	3,791	12,054	4,781	127
San Bernardino	7,450	13,500	750	1,320	80	350	250	720	525	320
San Diego	3,500	1,355	780	230	247	95	130	950	575	1,280
San Francisco	3,600	150	800	34	26	370	280	984	43	.....
San Joaquin	47,000	35,000	9,000	6,000	1,250	1,000	1,000	2,750	3,500	12
San Luis Obispo	4,750	1,630	1,200	620	250	125	340	225	175	65
San Mateo	15,000	1,500	1,500	1,000	1,000	1,000	500	1,000	50	20
Santa Barbara	24,789	13,113	8,420	1,224	2,835	1,028	3,500	4,915	8,002	1,320
Santa Clara	890,200	75,300	69,290	23,270	16,950	1,225	7,897	8,120	1,670	25
Santa Cruz	37,293	3,814	4,169	3,115	1,666	65	320	649	142	5
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	7,628	4,950	972	380	372	49	98	38	11	1
Siskiyou	35,482	15,675	2,004	1,572	1,216	486	506	487	47	.....
Solano	25,150	20,392	10,684	5,687	3,796	298	387	9,863	4,286	25
Sonoma	257,650	50,900	12,460	35,900	6,850	850	3,300	1,509	1,300	.....
Stanislaus	3,011	6,375	727	543	180	109	36	553	364	.....
Sutter	20,000	21,125	4,055	2,391	588	1,028	839	1,977	1,662	22
Tehama	9,000	30,000	2,500	1,800	300	900	200	1,400	500	7
Trinity	6,080	4,260	2,348	1,367	583	301	176	295	12	2
Tulare	15,000	23,500	6,515	3,115	504	852	3,415	6,938	1,415	539
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	42,971	52,440	17,484	5,758	2,800	1,976	1,178	1,938	2,767	9
Yuba	37,200	26,500	8,500	5,750	1,890	2,220	2,800	4,530	2,344	54
Totals	2,180,273	767,666	334,680	199,043	101,574	26,328	42,896	76,116	45,655	7,851

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of orange trees	Number of olive trees	Number of prune trees	Number of mulberry trees	Number of almond trees	Number of walnut trees	Number of gooseberry bushes	Number of raspberry bushes	Number of strawberry vines	Number of grape vines
Alameda	23	251	4,120	120	9,249	1,662	43,739	725,882	5,758,860	136,148
Alpine							500	300	500	300
Amador	160	16	180	5,000	1,075	475	12,940	16,220	70,940	1,683,000
Butte	230	240	11	402	900	40	7,000	2,000	1,500,000	807,000
Calaveras	28	2	45	700	100	903	3,300	25,000	700,017	107,063
Colusa					100					5,000
Contra Costa	82	100	108	6,059	324	2,403	4,805	5,100	520	362,680
Del Norte	1			12		19	886	25,530	9,400	10
El Dorado	14	3	252	63,400	385	377	7,104	16,206	150,834	1,357,895
Fresno	35		26		12	94			6,320	14,680
Humboldt					20	60	3,317	41,690	55,740	345
Inyo				10		10	50	100	200	1,000
Kern	18	5	3	20	2	20	1,000	500	33,000	3,000
Klamath					5		800	7,000	12,000	980
Lake	6	1	17	23	136	106	370	478	5,202	11,814
Lassen						64	372	4,417	28,938	2,158
Los Angeles	34,000	2,000	75	250,000	550	5,100	1,000	6,000	144,000	3,925,000
Marin										
Mariposa	1			89	35		570	1,780	2,123,000	120,000
Mendocino							1,000	1,500	12,000	25,000

Merced	.....	.....	.....	6,014	45	30	65	25	38,000	492,140
Mono	.....	.....	.....	.....	.....	.....	130	241	2,614	.....
Monterey	.....	38	203	261	337	128	2,000	2,500	250,000	180,500
Napa	25	.....	145	52,015	380	800	8,100	520	4,550	1,700,500
Nevada	20	.....	.....	69,000	361	78	1,900	7,800	31,500	80,750
Placer	29	.....	250	2,700	600	225	1,200	40,000	133,420	617,618
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	174	162	478	375,101	2,293	7,548	5,420	16,417	346,981	1,718,914
San Bernardino	720	80	350	1,000	650	820	500	7,000	10,500	481,450
San Diego	2,835	750	.....	2,480	149	380	289	500	1,300	85,000
San Francisco	.....	.....	.....	.....	.....	.....	18,000	600	22,000	15,000
San Joaquin	30	6	300	250	500	475	3,250	2,000	30,000	675,000
San Luis Obispo	20	315	20	175	25	215	700	600	37,000	53,700
San Mateo	10	20	100	25,000	500	500	1,000	1,000	200,000	15,000
Santa Barbara	1,521	25,004	2,212	15,431	14,565	6,470	5,750	940	35,750	396,518
Santa Clara	167	155	2,375	12,500	525	1,870	20,150	2,750	2,775,000	1,000,000
Santa Cruz	30	28	235	3,025	32	560	2,149	12,200	1,000,000	264,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	1	.....	16	20	10	19	1,964	8,400	4,760	9,600
Siskiyou	.....	.....	41	9,415	46	137	10,740	7,944	50,807	47,900
Solano	75	15	175	19,764	2,561	3,769	10,469	646	1,960	1,128,000
Sonoma	10	.....	275	500	2,620	420	12,900	3,020	127,120	3,240,520
Stanislaus	10	.....	.....	.....	25	.....	.....	2,500	25,000	150,600
Sutter	3	.....	48	32,429	290	452	393	279	2,475	273,102
Tehama	10	5	20	17	79	23	600	100	400,000	210,560
Trinity	.....	.....	.....	.....	22	15	3,465	18,789	109,345	40,870
Tulare	108	55	41	1,890	481	1,775	397	1,290	41,700	256,200
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	8	14	309	650,060	1,136	750	560	101	11,075	377,400
Yuba	130	38	44	5,000	690	646	7,000	12,400	127,000	475,000
Totals	40,534	29,303	12,474	1,609,822	41,815	39,438	207,844	1,030,265	16,431,328	22,548,315

TABLE OF STATISTICS—Continued.

COUNTIES.	Gallons of wine.....	Gallons of brandy.....	Number of horses.....	Number of mules.....	Number of asses.....	Number of cows.....	Number of calves.....	Number of beef cattle	Number of oxen.....	Total number of neat cattle.....
Alameda	3,080	500	6,525	733	11	4,063	2,462	1,881	327	16,002
Alpine	.....	.....	400	25	2	1,000	800	400	200	2,400
Amador	97,240	1,450	2,240	230	36	2,190	1,640	2,090	340	6,260
Butte	8,000	500	7,000	900	150	2,985	3,800	3,200	200	10,185
Calaveras	10,000	37,500	2,500	210	39	2,001	1,513	2,370	272	6,155
Colusa	.....	.....	6,402	610	38	2,429	2,000	6,000	10	17,489
Contra Costa	66,470	.....	6,751	541	40	8,677	6,356	2,922	62	24,033
Del Norte	.....	.....	693	69	3	811	601	1,172	158	2,742
El Dorado	133,985	6,400	2,315	160	41	3,260	2,660	3,884	255	10,059
Fresno	.....	.....	5,327	460	72	53,304	14,256	9,650	460	77,670
Humboldt	.....	.....	5,857	650	16	9,218	6,825	3,189	560	25,912
Inyo	.....	.....	798	134	53	203	30	798	52	1,083
Kern	.....	.....	4,051	260	212	20,042	20,042	2,951	254	63,231
Klamath	.....	.....	450	100	14	700	500	1,500	90	2,290
Lake	.....	.....	4,331	124	11	1,444	1,363	718	24	3,549
Lassen	.....	.....	1,984	201	4	2,647	2,357	7,180	77	12,261
Los Angeles	1,132.300	26,000	13,200	2,700	270	3,500	3,300	17,100	500	24,400
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	10,000	1,000	1,510	224	76	1,400	1,400	5,000	300	8,100
Mendocino	.....	.....	10,000	3,500	40	15,000	10,000	3,000	800	28,800

Merced	35,000	2,000	3,513	289	11	602	13,794	28,860	35	43,290
Mono	.....	.....	815	87	25	834	643	3,203	173	4,853
Monterey	5,200	700	7,409	376	15	7,716	4,068	17,774	61	29,610
Napa	94,320	30,420	5,420	510	50	3,370	2,520	3,875	116	9,881
Nevada	20,250	1,000	2,257	153	4	2,650	1,618	500	668	4,936
Placer	125,000	5,000	1,832	181	15	876	850	1,100	510	3,236
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	87,536	6,197	7,711	470	113	7,430	5,805	4,599	215	18,059
San Bernardino	76,400	12,316	6,500	550	50	2,875	2,530	10,850	240	16,495
San Diego	3,000	.....	9,730	831	78	3,050	2,986	22,527	546	29,109
San Francisco	.....	.....	9,000	180	5	3,150	120	130	40	3,440
San Joaquin	35,250	2,684	13,475	1,000	10	4,250	*4,500	7,250	300	16,300
San Luis Obispo	.....	.....	8,618	296	43	4,730	In beef cattle.	19,635	145	24,510
San Mateo	.....	.....	3,117	247	22	6,218	1,560	1,090	183	12,440
Santa Barbara	25,000	590	3,593	425	35	2,299	1,564	4,274	95	8,232
Santa Clara	45,000	500	9,265	997	5	5,767	3,215	1,800	612	21,661
Santa Cruz	5,000	.....	1,820	120	12	1,720	1,500	2,119	430	5,769
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	950	.....	846	180	30	1,635	1,398	535	239	3,807
Siskiyou	4,400	.....	6,914	1,284	38	4,860	3,400	22,426	400	31,086
Solano	76,829	3,125	6,856	1,125	7	3,941	3,150	5,285	75	12,451
Sonoma	350,280	7,987	11,662	1,036	27	10,786	7,650	19,104	410	37,940
Stanislaus	9,150	900	5,344	1,013	40	1,780	1,650	1,686	20	5,136
Sutter	40,072	4,106	5,476	505	12	3,395	1,428	4,114	102	9,839
Tehama	22,000	400	7,100	410	7	5,600	2,800	1,200	96	9,696
Trinity	506	340	613	195	2	1,200	1,008	2,700	204	5,212
Tulare	20,560	5,000	9,647	516	58	15,640	12,432	33,013	370	61,455
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	28,980	500	6,669	1,125	14	2,975	2,200	2,700	25	7,900
Yuba	64,800	3,900	3,590	352	10	3,380	2,320	3,013	94	8,807
Totals	2,636,558	161,015	241,146	26,284	1,866	247,603	168,614	300,367	11,345	787,771

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of sheep.....	Number of Cashmere and Angora goats.....	Number of hogs.....	Number of chickens.....	Number of turkeys.....	Number of geese.....	Number of ducks.....	Number of hives of bees.
Alameda	45,276	.....	34,772	51,051	3,791	971	7,642	318
Alpine	75,000	500	500	1,000	300	25	150	50
Amador	13,440	440	5,680	13,675	1,860	1,050	740	937
Butte	75,000	100	17,000	350,000	6,000	2,100	1,300	1,062
Calaveras	27,900	2,097	6,800	14,700	1,400	480	1,019	387
Colusa	176,321	50	30,000	20,000	10,000	500	600	500
Contra Costa	28,844	30	14,386	20,678	1,436	887	1,030	689
Del Norte	700	.....	1,020	3,264	48	172	138	158
El Dorado	9,158	572	4,540	10,579	736	394	422	694
Fresno	104,850	900	22,480	8,575	1,150	60	1,300	650
Humboldt	8,718	30	8,720	18,127	920	212	235	367
Inyo	450	.....	327	3,000	300	.....	50	20
Kern	144,809	60	3,031	10,000	150	40	300	150
Klamath	25	.....	850	2,470	9	20	15	40
Lake	11,885	.....	8,927	18,402	3,891	410	353	360
Lassen	2,610	.....	855	6,139	185	4	156	1
Los Angeles	437,200	4	5,000	36,500	1,700	600	2,200	1,980
Marin	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	21,800	1,200	9,600	13,500	1,173	200	1,200	4
Mendocino	200,000	.....	25,000	13,000	1,250	200	1,000	1,000

Merced	122,083	.....	11,296	26,008	2,495	626	2,180	1,142
Mono	3,586	.....	203	2,210	37	20	197	4
Monterey	177,390	1,300	7,189	43,800	630	850	1,200	2,512
Napa	8,200	.....	11,600	19,370	5,750	420	2,200	400
Nevada	2,270	.....	2,540	5,700	2,500	300	269	269
Placer	27,000	18	9,080	15,640	21,000	300	700	1,000
Plumas	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	102,698	634	9,488	34,448	8,972	1,572	1,805	2,350
San Bernardino	50,840	44	2,055	10,850	520	354	1,845	1,120
San Diego	39,372	604	1,761	14,800	300	140	200	375
San Francisco	250	300	3,000	2,760	1,040	725	442	29
San Joaquin	36,543	1,205	17,500	80,000	10,000	2,000	2,500	1,600
San Luis Obispo	137,690	772	2,368	87,600	1,250	212	425	935
San Mateo	891	17	2,136	9,000	400	200	900	300
Santa Barbara	163,382	290	470	30,622	537	125	825	650
Santa Clara	32,370	1,650	2,900	95,975	1,350	7,000	3,520	1,625
Santa Cruz	335	250	1,560	6,850	290	260	400	288
Shasta	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	636	1	845	7,872	178	81	304	113
Siskiyou	15,610	.....	6,910	20,120	710	392	628	784
Solano	43,754	30	11,413	75,670	12,846	1,575	3,286	450
Sonoma	50,300	125	20,900	49,275	2,430	5,250	4,880	395
Stanislaus	191,000	.....	12,712	47,000	7,477	1,384	2,500	500
Sutter	29,448	.....	9,603	.....	.....	.....	.....	.....
Tehama	135,000	97	14,000	20,000	2,000	460	300	200
Trinity	2,002	.....	501	1,465	518	105	95	402
Tulare	138,631	4	18,153	630	160	62	91	560
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	41,188	.....	14,379	48,790	7,600	670	382	856
Yuba	19,298	265	7,380	23,820	12,634	580	2,330	733
Totals	2,975,753	13,589	400,830	1,394,975	139,923	33,928	54,254	28,854

TABLE OF STATISTICS—Continued.

COUNTIES.	GRIST MILLS.				Barrels of flour made.	Bushels of corn ground.	SAW MILLS.		Feet of lumber sawed.	No. of shingles made.
	Steam power.	Run of stones.	Water power.	Run of stones.			Steam power.	Water power.		
Alameda	5	24	2	3	36,472	21,496	.....	.....	.....	.....
Alpine	.....	.....	.....	.....	.....	.....	3	4	2,000,000	400,000
Amador	1	3	1	2	5,600	6,460	7	.....	5,630,000	175,000
Butte	1	3	3	7	125,000	50,000	12	.....	4,500,000	600,000
Calaveras	.....	.....	.....	.....	.....	.....	4	6	1,900,000	7,000
Colusa	3	6	.....	.....	.....	.....	2	.....	.....	.....
Contra Costa	4	11	.....	.....	35,000	4,500	.....	.....	.....	.....
Del Norte	1	1	1	2	440	60	3	2	1,204,000	50,000
El Dorado	1	2	1	1	30,000	.....	15	10	8,940,000	224,000
Fresno	.....	.....	1	2	300	275	3	.....	2,400,000	.....
Humboldt	1	1	2	2	2,850	480	7	2	40,000,000	16,000,000
Inyo	.....	.....	2	2	800	250	.....	1	500,000	200,000
Kern	.....	.....	2	2	1,200	300	4	1	700,000	60,000
Klamath	.....	.....	2	2	1,170	280	2	5	2,500,000	40,000
Lake	1	2	1	2	15,000	2,500	4	2	1,350,000	600,000
Lassen	.....	.....	2	3	3,600	500	.....	3	425,000	45,000
Los Angeles	.....	.....	5	10	6,000	32,000	1	.....	10,000	.....
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	.....	.....	.....	.....	.....	.....	6	.....	2,200,000	300,000
Mendocino	2	2	3	4	25,000	500	15	5	45,000,000	10,000,000

Merced	.....	.....	3	9	14,046	7,000	.....	.....	.....	.....
Mono	.....	.....	1	2	800	150	1	2	495,000	.....
Monterey	2	2	1	1	2,750	.....	.....	.....	.....	.....
Napa	2	5	2	3	21,000	18,400	3	.....	280,000	18,500
Nevada	1	4	.....	.....	18,000	4,000	27	6	35,000,000	30,000,000
Placer	.....	.....	.....	.....	.....	.....	12	3	17,000,000	2,000,000
Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	4	18	1	1	196,500	15,000	2	.....	Re-sawing.	.....
San Bernardino	.....	.....	2	3	9,200	4,120	4	.....	3,000,000	900,500
San Diego	1	3	1	1	3,500	450	2	.....	913,000	.....
San Francisco	12	53	.....	.....	469,925	3,570	8	.....	24,200,000	.....
San Joaquin	4	14	.....	.....	87,120	5,250	.....	.....	.....	.....
San Luis Obispo	.....	.....	2	4	3,260	19,260	2	.....	1,468,900	100
San Mateo	1	2	1	2	3,000	50	14	3	6,000,000	150,000,000
Santa Barbara	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Clara	8	24	3	8	323,000	2,760	3	4	9,000,000	850,000
Santa Cruz	2	5	3	6	15,500	2,760	17	9	24,050,000	20,600,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	.....	.....	1	1	62	.....	9	12	5,140,000	190,000
Siskiyou	2	3	7	10	26,200	1,980	3	10	4,600,000	1,120,000
Solano	3	13	.....	.....	9,764	1,000	1	1	Re-sawing.	.....
Sonoma	4	6	4	5	50,500	4,720	15	1	7,650,000	4,200,000
Stanislaus	1	3	1	4	19,000	6,000	.....	.....	.....	.....
Sutter	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tehama	.....	.....	4	12	35,000	1,500	2	3	3,000,000	200,000
Trinity	.....	.....	1	2	1,210	50	.....	15	1,690,452	45,000
Tulare	1	2	2	5	7,798	5,300	3	2	3,500,000	1,000,000
Tuolumne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yolo	2	5	1	2	350,000	360	1	.....	600,000	.....
Yuba	3	12	1	2	54,000	16,000	9	5	4,600,000	1,000,000
Totals	73	229	70	127	2,009,577	239,181	226	117	271,446,352	240,825,100

TABLE OF STATISTICS—Continued.

COUNTIES.	QUARTZ MILLS.		MINING DITCHES.			IRRIGATING DITCHES.		WOOLLEN MILLS.		COTTON MILLS.		COAL.	RAILROADS	
	Number.....	Tons crushed....	Number.....	Miles in length..	Amount of water used per day—inches.....	Number.....	Acres irrigated..	Number..	Pounds of wool used.....	Number....	Pounds of cotton used.....	Tons mined.....	Number.....	Miles in length..
Alameda.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	$90\frac{1}{4}$
Alpine.....	4	100	.....	.....	.....	1	500	.....	.....	.....	.....	.....	.....	.....
Amador	27	70,360	32	405	5,450	20	640	.....	.....	.....	.....	3,000	1	$\frac{1}{2}$
Butte	18	8,000	32	190	41,000	42	2,200	.....	.....	.....	.....	.....	2	52
Calaveras	28	130,060	19	515	5,800	27	315	.....	.....	.....	.....	.....	.....	.....
Colusa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contra Costa.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	124,000	2	13
Del Norte.....	.....	.....	30	112	8,912	4	35	.....	.....	.....	.....	.....	1	1
El Dorado.....	44	21,645	58	966	9,450	58	1,966	.....	.....	.....	.....	.....	1	$12\frac{3}{4}$
Fresno	2	.....	.....	.....	.....	1	500	.....	.....	.....	.....	.....	.....	.....
Humboldt.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2
Inyo.....	4	600	1	3	40	10	1,000	.....	.....	.....	.....	.....	.....	.....
Kern	11	500	2	5	1,728	3	1,200	.....	.....	.....	.....	.....	.....	.....
Klamath	4	6,000	80	90	16,000	10	800	.....	.....	.....	.....	.....	2	2
Lake.....	.....	.....	.....	.....	.....	1	1,000	.....	.....	.....	.....	.....	.....	.....
Lassen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles.....	2	5,500	3	25	800	50	17,000	.....	.....	.....	.....	.....	1	$20\frac{1}{2}$
Marin.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	34	24,000	10	66	Unknown.	60	210	.....	.....	.....	.....	.....	.....	.....
Mendocino	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Merced						4	2,300	1					2	46
Mono	5	330	2	13	720	14	3,000						1	13¼
Monterey													1	112
Napa														
Nevada	60	190,000	70	946	42,400	6	900						3	62½
Placer	14	5,000	10	302	14,000									
Plumas														
Sacramento			2	45	4,000			1					1	
San Bernardino	1		2	5	500	40	9,200							
San Diego	2	900												
San Francisco								3	1,300,000				8	40
San Joaquin						2	4,000	1	Incomplete.				3	61¾
San Luis Obispo														
San Mateo													1	25
Santa Barbara														
Santa Clara						43	765	2	425,000				4	60¾
Santa Cruz														
Shasta														
Sierra	21	31,000	49	208	21,000	19	320							
Siskiyou	3	270	24	290	5,010	170	6,080							
Solano													2	43⅚
Sonoma													1	3½
Stanislaus			3	12	1,000	10	200							
Sutter													2	34
Tehama			1	7	160	41	700							
Trinity			116	340	45,773	76	857							
Tulare	2					10	2,000							
Tuolumne														
Yolo						2	10						1	32
Yuba	4	2,000	18	69	4,500	22	575	1	350,000				3	28¼
Totals	290	496,265	564	4,614	228,243	751	58,273	9	2,075,000			127,000	47	756⅚

TABLE OF STATISTICS—Continued.

COUNTIES.	ASSESSED VALUE OF PROPERTY.				Estimated total population	Registered Voters	Poll Tax collected
	Real estate.	Improvements	Personal property	Total valuation			
Alameda	$8,089,150	$1,532,560	$2,164,671	$11,786,381	24,000	4,200	$7,402
Alpine	220,860	With real estate.	130,869	351,729	686	279	250
Amador	1,562,284	280,560	528,420	2,371,264	11,340	3,640	2,340
Butte*	654,513	301,841	1,658,035	2,614,389	14,609	2,943	5,236
Calaveras	558,741	With real estate.	527,106	1,085,847	8,845	1,929	2,810
Colusa*	1,897,556	With real estate.	2,014,934	3,912,490	6,000	2,003	1,000
Contra Costa	1,817,621	589,493	1,118,964	3,526,078	10,000	2,398	2,240
Del Norte	119,902	82,924	283,763	486,599	1,500	436	1,063
El Dorado	276,190	807,647	1,183,837	2,267,674	10,500	2,985	5,152
Fresno	1,619,596	86,715	1,307,297	3,013,608	3,200	758	552
Humboldt	594,415	430,645	1,090,170	2,115,230	8,000	1,749	2,307
Inyo	69,436	95,510	185,746	350,692	1,200	300	446
Kern	653,190	104,251	1,249,005	2,006,446	2,000	849	526
Klamath	155,637	With real estate.	244,187	399,824	3,000	407	1,168
Lake	277,947	246,649	372,491	897,087	3,100	900	438
Lassen	185,915	With real estate.	385,441	571,356	1,300	330	285
Los Angeles	3,711,055	With real estate.	2,086,116	5,797,171	16,000	3,820	2,980
Marin*	1,797,193	With real estate.	920,410	2,717,603	6,900	1,335	2,546
Mariposa	194,870	437,480	525,563	1,157,913	6,000	2,100	1,962
Mendocino	497,287	176,587	1,562,890	2,236,764	10,000	1,800	2,100
Merced	1,032,818	With real estate.	163,988	1,106,806	2,820	817	558
Mono	39,410	65,450	211,636	316,496	500	225	206
Monterey	2,138,346	282,970	1,253,134	3,674,450	9,840	2,649	2,493

Napa	2,849,175	With real estate.	1,178,449	4,027,624	10,000	2,077	2,370
Nevada	3,451,913	With real estate.	2,409,152	5,861,065	20,000	6,952	4,050
Placer	1,834,748	With real estate.	1,645,460	3,480,208	11,500	6,028	6,968
Plumas*	612,138	With real estate.	589,692	1,201,830	5,000	1,175	.....
Sacramento	5,718,275	603,590	4,851,839	11,173,704	32,000	6,000	10,500
San Bernardino	703,301	19,332	474,637	1,197,270	6,800	1,381	518
San Diego	1,271,937	With real estate.	971,818	2,243,755	5,000	875	60
San Francisco	72,000,500	With real estate.	29,587,989	102,087,989	150,000	37,037	.....
San Joaquin	3,465,280	1,900,780	2,476,710	7,842,770	25,000	5,013	3,484
San Luis Obispo	1,249,865	208,510	897,230	2,355,605	5,600	1,352	365
San Mateo	1,579,941	19,040	343,050	1,942,031	6,000	1,446	801
Santa Barbara	841,868	With real estate.	626,267	1,468,135	6,000	1,347	660
Santa Clara	5,874,450	2,926,700	3,039,138	11,840,288	25,000	6,374	9,000
Santa Cruz	1,284,850	791,205	809,370	2,885,425	8,780	2,361	2,884
Shasta†	.....	.....	.....	.....	.....	.....	.....
Sierra	762,395	290,185	647,492	2,000,072	5,800	2,280	3,680
Siskiyou	385,223	With real estate.	1,365,095	1,750,318	6,842	2,480	.....
Solano	2,986,482	1,324,327	1,803,813	6,114,622	21,000	4,087	4,529
Sonoma	4,112,208	164,100	2,268,757	6,545,067	22,000	5,350	6,828
Stanislaus	1,619,000	404,000	1,181,761	3,204,761	6,500	1,600	2,246
Sutter	1,112,434	358,913	934,948	2,406,295	5,300	1,525	1,494
Tehama	559,057	With pers. prpty.	1,499,380	2,058,437	.....	900	3,000
Trinity	60,795	184,210	340,000	585,005	3,250	860	1,000
Tulare	1,545,418	With real estate.	1,908,209	3,453,627	10,000	1,780	780
Tuolumne*	625,079	With real estate.	552,170	1,177,249	8,500	2,117	1,958
Yolo	1,946,434	590,470	2,041,241	4,578,145	15,360	3,841	4,200
Yuba	860,645	1,353,470	1,852,040	4,066,155	10,831	3,313	4,429
Totals	$147,976,843	$16,660,114	$87,764,380	$252,401,337	594,003	147,443	$121,864

* Taken from last year's report; no report received this year.
† No report last year; no report this year. This county should elect better Assessors.

TRANSACTIONS

OF THE

STATE AGRICULTURAL SOCIETY

FOR

THE YEAR 1871.

STATE BOARD OF AGRICULTURE FOR 1871.

PRESIDENT.

CHARLES F. REED.....Grafton, Yolo County.

DIRECTORS.

C. T. WHEELER.....Sacramento.
EDGAR MILLS.....Sacramento.
ROBERT HAMILTON.....Sacramento.
C. YOUNGER.....San José.
H. R. COVEY.....San Francisco.
R. S. CAREY.....Yolo.
WILLIAM BLANDING.....San Francisco.
E. J. LEWIS.....Tehama.
WILLIAM P. COLEMAN.....Sacramento.

OFFICERS OF THE BOARD.

Secretary.....ROBERT BECK, Sacramento.
Corresponding Secretary.....I. N. HOAG, Yolo.
Treasurer.....R. T. BROWN, Sacramento.

OPENING ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER NINETEENTH, EIGHTEEN HUNDRED AND SEVENTY-ONE.

By CHAS. F. REED, President.

Gentlemen of the State Agricultural Society, Friends and Fellow Citizens:

The return of our great annual festival again calls for an account of a year's stewardship. Your partiality has called me to this important position for the eighth successive year, and the labors of that year are fast hastening to a close.

At this time, and from me, you will not expect any learned discussion upon the philosophy or abstract principles of agriculture. Nor even will you expect any considerable amount of suggestion or instruction pertaining to the future of your work as cultivators of the soil and improvers of the State. These things will be ably presented to you in the annual address soon to be delivered by a gentleman who once presided over your body with great success, and is eminently fitted, by long and large experience, to treat the subject in a most satisfactory manner.

From me you will expect only an account of our year's progress; and this I propose to give you very briefly and in plain phrase.

At the time of our annual meeting, in January last, fearful forebodings of disastrous drought oppressively rested upon us all—forebodings which a season of unparalleled scarcity of rain has since fully justified.

Through large districts of our State the rainfall for the entire year has not been sufficient to mature a kernel of grain or pound of hay—not sufficient to keep from actual starvation large numbers of the various classes of stock—not sufficient to keep the population of the State, as a whole, from large decline in means and in courage. In such a state of things it has not been surprising that large numbers of our culturists and our artisans have sought new homes in our sister States and Territories to the north, where they could find rains more regular, and the hopes of steady accumulation more sure.

Thus, while our fields were barren, our cattle and horses and sheep vainly roaming in search of food; our laborers out of employment, our

artisans unpatronized, our merchants destitute of custom, and multitudes of our people leaving us for scenes of richer promise, the work of getting up an annual Fair, though presenting many forbidding aspects, was entered upon, a few months since, with an unusual fullness of determination to make it a success—and for my associates I can truly say, men never wrought with better will, nor more firmly faced a foe.

With no money in our hands, and the whole people groaning under misfortune, we increased both the size and number of purses and premiums for every class of industry and production within the legitimate sphere of our organization. We enlarged the accommodations of the Park for all classes of stock, and the conveniences for exhibitors and spectators. We largely improved both halls of the Pavilion and added several new and important features. All this was done under the impression that our people are at all times equal to any legitimate emergency. How this impression was justified is evinced by the results already manifest. Let us look, for a moment, at some of them.

To pass by, with only a glance, the show of native woods, and the furniture made therefrom, either of which would endure favorable comparison with any other, in any part of the world; and the native products of the grape, in their sparkling beauty and varied forms of excellence, and the display of fruits, which most necessarily suffer largely from the year of drought, I beg to call especial attention to the most numerous exhibition this Society has ever seen of that great invention—

> The joy of every wife and mother,
> Her pride, and glory, too;
> A greater balm than any other,
> For woman's weary woe,

The sewing machine. Well knowing that the final triumph of industry in California depends largely upon the multiplication and general use of labor saving machinery, we ventured the expense of preparation for an unusual display in this department, which saves so much labor where time and strength are most precious, and toil most exhausting and costly. And even the large preparations we made have proved insufficient for the ready and hearty response to our invitation. We have found it utterly impossible to furnish the required space.

Nor has utility absorbed all, or even taken the lead. It is only a few years since a small upper room, on the rear of the corridor, was ample for the display of all art work offered for exhibition. Last year the entire north wall of the main building was thus appropriated, and the department of fine arts became, and continued to the closing hour of the Fair, a marked feature. And as one direct result of that exhibition, a young artist, with skill, but no fame, who for years had wrought, with unrequited diligence, often hearing "the wolf" at the door," tremblingly hung his work upon yonder wall, and before the close of the Fair received orders for important work, which have continued to flow in from that day to this, giving him constant and remunerative employment and establishing for him a reputation, paving with gold all his future path of life. This department—much larger last year than ever before—has been so largely patronized, that instead of one hundred feet of wall space, there was asked for, ten days ago, one hundred and seventy-five feet, and we now have filled a gallery two hundred and eighty feet long, and that, too, with works many of which would be coveted by and richly grace the finest palace in an European home of art.

Here, too, is a music show, which, for the extent of its display and the elegance of its instruments, is entirely without a rival in our history, and would be an honor to any Fair held in our land.

We have also an unparalleled exhibition of furniture, manufactured within our own State, from material grown on our own soil; while the display of California manufactured vehicles would compare favorably with the best seen anywhere.

But further than this, there have come "wise men from the East" to show us the fruits of their skill and industry. The empire of Japan has stretched out her hand, laden with the elegant products of her industry, across a watery waste of ten thousand miles, and looks you in the face from the post of honor this evening; and surely, after an impartial examination of this magnificent display, no intelligent mind can despise the civilization of the Japanese.

We have also instituted a system of exchanges with more than twenty of kindred institutions in the older States—sending them supplies of our fruits and grains, and in return receiving theirs, which are now before you in this building. Thus, while this course, and the throwing of our competition open to all North America, has given us a national character, and the proffer of Eastern Asiatic nations to enter the arena with us, an international character—and this, with our peculiarly fortunate location, will in a short time render our exhibition more cosmopolitan in character than any other of the kind held on the globe.

We have also added, at considerable expense of time and labor, another entirely new feature, a living floral garden. This has been so successfully arranged and supervised by one of the Society's oldest servants and best friends, that it cannot fail to be an object of deep interest to every lover of the harmonious combination of Nature and Art who may attend the Fair. Nay, I should not wonder if its fragrant bowers and moss covered seats witnessed more than one solution of the problem, how can two be only one?

But time forbids my specifying here.

I propose a trip to the Park. And as most of us have drunk the cup and eaten the crust and slept in the blanket of pioneer toils, a little reminiscence, by the way, may not be out of place.

Though last week we were merchants and statesmen, lawyers and physicians, preachers and politicians, Eastern men and Western men, Northern men and Southern men, Republicans and Democrats, Catholics and Protestants, Jews and Mahomedans, with characteristics as diverse as the forms of our features or the shades of our faith, yet this week here we meet on common grounds—we are all agriculturists, believing in Agricultural Fairs, and loving such of their fruits as hot rolls and fried chicken, roast beef and plum pudding, warm blankets and 2:40 teams.

But really, why so much ado about agriculture? The culturist is a staid, sober, candid man, not full of form and ceremony, nor yet of shouts and enthusiasm.

His golden harvest fields, his bleating flocks, and lowing herds, and prancing steeds, and flowing vines all inspire him with emotions holier than mirth, more dignified than enthusiasm.

And yet, at his success the world is full of joy. In this success the soldier sees the guarantee of fuller, fresher rations, the merchant of enlarged commerce, and the epicure of more richly laden sideboards. In this success every laborious profession, every honest calling, every

laudable department of human effort, is certain to share. "As the farmer thrives so the whole world lives."

These annual gatherings of the great multitude of our culturists, each laden with the year's experience in his own particular sphere, ready to cast it into the lap of all the others, strikingly remind us of those good old times when they "had all things in common." They literally enable each of an hundred men to learn all that the others know of experiments tried and theories demonstrated; which knowledge, thus diffused, constitutes a system of practical education second to none ever instituted for the instruction of man.

In this gathering, also, the various departments present the choicest specimens of their purest bloods—an exhibition of which any State or nation might be justly proud; horses, such as well might cause a monarch to exclaim, "My kingdom for a horse" like this; bulls more noble than those of Bashan; cows richer than those that went lowing with the ark of God from Ekron to Beth-Shemeth; sheep of finer fleece than the vales of Cashmere ever grew; and machines such as the world never saw before.

Machines have been recently invented and manufactured in this State, each of which, with only three men and a team, is capable of cutting, thrashing, cleaning, and sacking thirty acres of wheat per day that will yield forty bushels per acre.

And such machines are needed in a country where a single proprietor has a single wheat field containing sixty thousand acres. Twenty-five square miles in a single patch of grain! Why, this man alone would need half a score of these machines, and even then it would take him two solid months to gather his harvest.

But how did he put in such a crop? With his gang plows and chisel cultivators, to be sure! By old-fashioned means, had he set ten teams at work, and thus put in twenty acres per day, it would have taken him two and a half years to do his seeding; and by the corresponding means of harvest—the cradle, the rake, and the band—the same ten men would have been more than five years harvesting it.

The manufacture and use of the best labor-saving machines are absolutely necessary to successful farming on a large scale.

We, the producers of this State, have not met here to canvass political issues or discuss theological science—to unravel the vexed question of international immigration, or to inveigh against the squandering of our public domain—to theorize upon human equality or contemplate the glories of annexing the whole continent to our nation; hence it is not in place—would be impertinent—for me to occupy your time with adroitly framed arguments in favor of or against a hard money or a paper currency. These things might tickle the fancy of bankers and brokers, and inspire enthusiasts with visions of a country made rich in specie by a liberal use of greenbacks; but it would be no more in place than a Coroner's jury in a ball room, or the performance of an opera in a Quaker meeting.

As we entertain errors we multiply hazards; and as we correct them, we multiply the means of success. And yet errors, radical errors, are common among us, very. One of these is that the railroad communications in a country interfere with one of the prominent interests of our society—stock raising. Now this is by no means true—they actually facilitate it, and the philosophy of this apparent paradox is this: vast quantities of fertile and easily cultivated land are so remote from market that when transportation depends upon team wagons, the cost of freight

is a positive bar to successful husbandry. Hence such lands either lie entirely waste or are claimed and occupied by people who erect a cabin, milk a cow or a goat once a day, plant a patch of corn and squashes to be shared in common by an equal number of squalid urchins and grunting specimens of embryo bacon; raise a few chickens to supply omelets and egg-nogs, and an occasional four-legged calf with which to grace the return of a prodigal two-legged one, and a donkey or a mule to pack a grist to mill and his owner to town on election day to hear the news once a year.

In such a state of things there is absolutely no demand, no use for good stock, and very little for any sort. But build and stock and work a good railroad through such a district of country, and you have comparatively brought the metropolis, with its ever increasing demands and upward tending prices and cash payments, to every door. Now, these waste places are called upon for holiday poultry and breakfast steaks and dinner roasts, and vegetables and fruits to the extent they have never dreamed of; and under the influence they awake to the propriety and profit of enlarging their operations, cultivating their lands and securing to themselves some of the good things of this life as they pass through it. Now, their butter and their cheese, their bacon and their beef, find buyers at their own doors. Now, the price of grain at the depot warrants the running of a score of gang plows, calling for half a hundred pairs of animals. And the farmer, thus waked up by the locomotive whistle, will not be slow to observe the advantage of blooded Devon steers at the plow, whose elevated heads and elastic step and all day endurance give him a hundred per cent more work than the best of scrubs, while it actually costs him less to keep and manage them; and of blooded horses, whose action and bottom give him twice the distance in an hour, whether at the plow or on the road, that he can safely get from the slow molded, quickly exhausted, common horse of the country.

And now how changed the scene! The donkey, between the splintered shafts of his rickety cart, gives place to a pair of roadsters and a phæton; the broad expanse, grimmed with gastly desolation, becomes a fertile plain, waving with a golden harvest; plows and harrows and reapers and mowers and thrashers and cleaners, each in season, and in its place, adds life to the view and zest to the scene, until the whole year becomes a gala day of active, exciting, productive industry. The farmer, no longer a drudge and a drone, perches himself upon the elevated seat of his improved implements and with absolute comfort rides through the work of the year.

And of stock, if any land on earth can produce good stock, it is this. I know it has been said of sheep that the finer grades deteriorate, grow coarser here. But our Flints and McConnells and Websters have demonstrated the error of this, and now show us specimens of the sixth and eighth generations, actual improvements upon the imported parents. Surely our Walshes, Emersons, Swezys, Roses, and Youngers have shown us that the noble Durham here attains a size and form equal to the best in the world, and the elegant Devon color, and symmetry, and power, and endurance in the yoke second to none, while the magnificent Alderneys fill longer buckets and require larger churns and more powerful presses than in any other land on earth.

I also beg to call attention to a new California invention for the making and refining of brandies from the grape in so brief a time and in such a state of perfection as to render this important department remunerative, instead of ruinous, as it has heretofore been. There is already a large

and flourishing institution established upon a firm basis in this city, which will give employment to a large number of men and a free market for an unlimited quantity of grapes, which might otherwise be a drug on the hands of the grower.

And right here, lest I forget it in a more appropriate place, I propose to say what would make my own ears tingle, and I fear unduly excite me, should I hear it said by any other than a Californian, viz: that it is a shame—a disgrace—a burning sarcasm upon the intelligence, and industry, and financial common sense of California agriculturists, that in such a country, where dairy products might be more abundant and secured at less expense than anywhere else in the land, so many sit down and fold their hands, or roam from place to place looking for "situations" behind the counter, where they may sell tape and calico to lady shoppers, or in some counting room, where they may play second fiddle to an assistant bookkeeper's clerk, while we pay for the making and bringing three thousand miles a hundred tons of butter a week—and all this while tens of thousands of acres of as good dairy lands as ever lay outdoor, and as many lowing herds of the best dairy kine unite in calling you young men to marry wives and milk the cows and make the butter and get the money for your purse. If you have no capital, take a farm, as the old folks say, "on shears," and my word for it the clippings of those "shears" will, the first year, enable you to begin to buy, begin to breed, begin to multiply your stock, begin to be an employer, an independent, influential member of society, and a benefactor of the State.

But I must haste to the point I have put off as long as possible! I cannot escape it. I must "talk horse" *just a little.*

We want horses—the best of horses—horses of pure blood and easy pace and speedy trot and long endurance.

When Pope was defeated, and Banks, ignorant of the fact, was marching his gallant band into the very jaws of death, and to save them all from utter ruin, Baker, the successor of two who had failed in the attempt, must ride knee deep in Virginia mud, through a pelting storm, a hundred and twenty-four miles in twenty-one consecutive hours, to carry dispatches from the War Department to Banks, what if there had been no thoroughbred at his service? Or, what if after the first twenty-four miles, and no relay could be found in all McDowell's corps equal to the task—the horse had been a scrub, or a half-breed, would he have resumed and completed the enormous task? Or, when gaunt with ninety-five miles of fasting and foaming he was put to the task of carrying his rider through a gap, only twenty yards wide, in a battalion of the enemy's infantry flanked by a hundred of Virginia's best-mounted cavalry, all ready to shower him with bullets—would he have shot through that opening like an arrow, with his rider hugging the side of his neck, and then carried him thirty-five miles further, outstripping those fresh cavalry chargers, if there had been one drop of cold or impure blood in his veins? Never! Such ordeals are never passed, such triumphs never won, but by pure blood and careful training.

And yet of the pure blood and distinct races of the horse there is, perhaps, among the American people, less knowledge and more humbug than upon any other equally important subject. While we have at least half a dozen distinct varieties of first-rate horses, we pass them by as only "common Canestoga, or Canadian, or Norman, or pacer," and yet talk, with a great show of learning, about the "English cart horse, the English dray horse, the Cleveland Bay, the Suffolk Punch," etc., which

are about as real existences as was Barnum's mermaid, or Mrs. Tom Thumb's baby.

If we talk horse we may make England, and not America, our theme. While the truth is, that in our country good horses, like good education, are common among the people, and not, as in Europe, confined to princes and nobles. Here, every man, old and young, with his thousand a year, must have his fast nag. And yet where is the man that really knows how to manage a horse properly after he is broken and bitted?

And yet genuine, refined horsemanship needs cultivating in our midst, until our youth, both male and female, can

> "Rise from the ground like feathered Mercury,
> And vault with such ease into the saddle
> As if an angel dropp'd down from the clouds
> To turn and wind a fiery Pegasus,
> And witch the world with noble horsemanship."

Instead of this it seems the hight of our ambition to so train our horse as to reach the greatest speed and bottom, without reference to such manner as will secure ease to his reinsman or backer and economy of power to himself. How seldom do we meet a buyer who looks for education in his purchase—a mouth that feels and yields to a feather's weight on the rein, and the right foot foremost in the lope—an elevated crest, and a chin to his chest. And how few would find it if they did seek it, and fewer still would know it when they found it.

A pure blooded, well educated horse, in the hands of an accomplished horseman, whether in the harness or the saddle, or the plow or the wagon, on the road or on the track (aside from "the human form divine") is the finest, grandest, noblest creation of the earth.

To raise and train and prove a horse of purest blood and vast endurance is one of the noblest occupations of man. To hold the reins and see him go, and mark his time, is one of the most exhilarating recreations.

I tender to you a hearty welcome to our Fair, and congratulate you—yea, I congratulate the whole people—on the auspicious opening of this Fair. May every day of its continuance be full of joy to all, and its close a season of mutual regrets that we could not bathe in its waters, and bask in its sunlight, and recline in its bowers forever.

ANNUAL ADDRESS.

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER TWENTY-SECOND, EIGHTEEN HUNDRED AND SEVENTY-ONE.

By T. G. PHELPS.

Mr. President, Members of the State Agricultural Society, and Ladies and Gentlemen:

Another year, with its changing seasons of seed time, flowers and harvest, has rolled its busy round, and we have met together again for the annual display of the products of our skill and labor, that each may learn from all the others whatever experience has taught, or skill or inventive genius may have developed during the year, which may be of general or partial utility in the future, whether it be in the cultivation of the soil, the enlarging of the variety of our marketable crops, the adaptation to our wants of new or better perfected labor saving machinery, or in the improvement of our herds and folds. How much we learn from each other from these annual convocations is shown by the great variety and fine quality of the exhibit here made of the productions of the farm, the orchard, the vineyard, and by the great variety and superior quality of the thoroughbred and judiciously graded domestic animals I have seen in your stalls, and the quantity of meritorious labor saving machinery on exhibition here, on which ingenuity seems to have exhausted skill, and perfection in many instances to have been reached.

What kind of success would that husbandman meet with who would confine himself to the use of the very best appliances of twenty-five years ago? Plowing with a cast iron plow of inferior mold, reaping with a sickle, and thrashing with a flail? In that brief period we have passed from the cast iron plow to the steel gang, from the sickle to the header, and from the flail to the steam power and horse forks. The next advanced step will be to steam plows and steam harvesters. Eminent success in the present advanced and rapidly advancing age can only be obtained by the farmer by raising the best crops, the most of them, and at the lowest cost, without deterioration of his soil—his future reliance as the source of his future productions. Here we learn from each other's experience how to attain the former and avoid the latter.

These annual gatherings are not only necessary to the prosperity of individuals, but equally so to the prosperity of communities and States. In our agricultural productions, we are, in this age of steamboats and railroads, in open competition with the civilized world. We need, therefore, the most approved appliances of husbandry and the ripest experience

of the practical and scientific. We have many advantages in our favor, and some very great disadvantages and embarrassments to contend with. These must all be summed up and fully understood, and then we must prepare ourselves for successful competition. On this our individual future, and the future of our State, depends. We can and we must achieve success. In this connection I have some practical suggestions to make, which may or may not be worthy of your consideration, and which you will accept or reject, as your greater wisdom and experience may dictate. I make them with the hope they may elicit discussion, through which important facts may be evolved and correct theories established.

Looking to the future of California, nothing strikes me as so important as the furnishing of employment to all our people. That country is growing rich or poor, advancing or retrograding, not in proportion to the nominal rates of wages allowed its laboring men, but more nearly in proportion to the regularity of their employment.

While we in California maintain, perhaps, the highest rates of wages of any country under the sun, it is a fact as patent and undeniable as it is lamentable that the average earnings of our working men are not correspondingly great, because we have a large idle population, and this, too, in the infancy of all our enterprises, with a broader field open to the laboring man, in farming, mining, manufacturing, and mechanical pursuits, than ever before tempted men to industry. In this there is something radically wrong, which must be radically changed. Hands should not be without labor while the golden harvest invites them to the field. The causes which have led to this condition of things are various, and have grown out of our past and present surroundings. Many old Californians are too restless, and too much occupied with the golden dreams and visions of the past, to settle down to any steady or safe employment. If they would build themselves houses they might at least be surrounded with every comfort. The next most serious hindrance to our prosperity is the tendency of our people to drift into our large towns and cities. This disposition is not only manifested by the people of California, but of the whole country, and must be regarded as one of the most evil tendencies of the age. One fourth of the population of this State to-day resides in the City of San Francisco, and one fourth of the balance in the six or seven next largest cities of the State. Rural life is fast losing its charm for our people, who are exchanging their quiet homes and simple habits, the pure air and pleasant scenery of the country, for rented rooms amid the restless confusion of city life.

This is greatly to be regretted. While a few in cities attain great wealth and opulence, it is to the yeomanry of the country a State must always look for its development and sources of wealth. A busy, thriving country population may maintain large cities in the commercial exchange of its products, but large cities can never maintain the country. Cities, as a rule, absorb more of wealth than they create. The surplus population of our cities must be employed in manufacturing and mechanical enterprises. This can and should be done, though large cities are by no means the proper places for carrying on manufacturing enterprises, for the reason it costs the operatives much more to live, which must be added to the cost of the product of their labor, and there are no corresponding advantages. Yet a diversified industry is not only desirable, but necessary to our prosperity. The manufacturer is no less important than the farmer. These industries must go hand in hand. That State is in the best condition which most nearly supplies its own wants, and sells its surplus in the most valuable and marketable shape.

There is no more mistaken policy than that which would compel our people to become producers of raw material only. This course would render us large sellers, it is true, but it would also render us equally large buyers, making us dependent upon the fluctuations of foreign markets instead of the stability of our own. The early history of California is sufficient to convince any one of the correctness of these views. Then we produced largely a material which is the standard of all values the world over, but were compelled to rely upon the other States and countries for all the necessaries of life. What was the result? Just what might have been expected. The profits were made by those who furnished the supplies. California gold has built more palaces on the Hudson than on the Sacramento, more mansions in New York and Boston than in San Francisco. We are now, with all our complaints of dry seasons and hard times, gaining in material wealth faster than we were fifteen years ago. The experience of every country which has confined itself to a single industry, however important, has been the same. The history of the Southern States up to the time of the late war furnished a most striking illustration. The people of those States, having control of a soil of unsurpassed richness, and favored by a temperate climate, availing themselves of a cheap servile labor, directed their main attention to growing cotton for export. Their product was in great demand, and they virtually controlled the market. Their exports were enormous; but did they increase in wealth and general prosperity? No—not in comparison to other less favored sections maintaining mixed industries. New England, with her sterile soil and bleak hills, far outstripped them in the accumulation of wealth, the average comfort of her people, and the general diffusion of knowledge. It is unnecessary to enlarge upon this point, as it is generally very well understood. It becomes a matter of interest, then, to inquire what progress we are making towards supplying our own wants. In other words, how independent have we become, through our own industries, of the people of other countries? That we have made fair progress in manufacturing, considering the circumstances which have surrounded us, is probably true. We have many manufacturing enterprises of which not only those engaged in them, but the State, may well be proud. But should we be content with what we have done? By no means. We now ship away seven or eight million dollars' worth of wool. This wool, manufactured, would sell for twenty millions, at least. Why, when we have idle labor, should not this value be added to it? We export hides, import boots, shoes, and harness. We export timber and import furniture, and yet we have the finest woods for furniture on this coast to be found in the world. We export wheat and import agricultural machinery; and so on through the whole catalogue, and this, too, in the face of the fact that men are importunate for the opportunity to labor. This is a wrong to the poor, who should be encouraged to add, by their industry, to their own comfort and the wealth of the State.

Let every effort be made to foster and encourage manufacturing interests of every sort, in every part of the State. Let them have the protection they need to nurse them into life and full growth. To extend this to them is no less the interest of the farmer and mechanic than the manufacturer, so intimately blended are all these interests. The man who can successfully establish a manufacturing enterprise, however small, is a public benefactor, and should be honored as such.

These industries have been greatly checked, no doubt, by the differences which have arisen between the employers and the employed

relative to the rates of wages and the hours of labor, or what many are pleased to call the antagonism between labor and capital. There seems to be but one way out of this difficulty, and that is through individual enterprise, where that is practicable, and where it is not, the combination of the capital of the operators in coöperative organizations. It would seem that these associations should give to operatives exactly what they earn, and leave them free, without let or hindrance, to fix the hours of toil to suit their own convenience and interests. As nothing seems to stand in the way of their formation, it is surprising they have not been more generally resorted to. One thing is certain, it is every man's duty to himself, to his family, and to society, to be as independent as possible of all others in the control of his labor, and in reaping all the fruits therefrom.

Who can contemplate a life less interesting, more perfectly bereft of every ambitious hope of improved condition, than one spent as a journeyman mechanic, or as an operative in a manufacturing establishment? In such a life the ordinary stimulus which impels men to action is wanting, and it is not surprising, therefore, that men become restless and complaining. Every man who employs himself will find that he is his own best paymaster, and with himself he will never have any disputes about rates of pay or hours of labor, nor will he be ordered by his society to strike, and as a consequence see his family starve, while he remains unemployed. If men cannot control their own labor in our cities, how much better than idleness, or at least the uncertainty of employment, would be a farm in the country. Here at least all can place themselves above want, if they will depend upon their own labor and not make farming a hazardous speculation. But many will say there is no land within their reach. Is this true? The Secretary of the Interior estimates the amount of land adapted to agricultural purposes in this State to be about sixty-five million acres, and fifteen million in addition as suitable for grazing only. In eighteen hundred and sixty-five there was of this amount under fence four million fifty-five thousand six hundred and ninety acres, and under cultivation but one million five hundred and four thousand six hundred and eighty acres.

Probably there is not now more than six million acres under fence, and two million five hundred thousand under cultivation. These estimates, which are believed to be large, would show that but ten per cent of our agricultural land is yet under fence, and less than four per cent under cultivation.

This shows that there is not only room for all our people who desire to cultivate the soil, but for more than twenty times the number we now have. At first thought we are staggered by such a calculation as this; but if we take a ride from Yolo County to the north line of the State, and from the Stanislaus to the Colorado River, or, if we spread before us the map of California, and pencil off that portion of the State which is now actually occupied by the agriculturist, we shall see the estimate is a true one, and that the amount of land actually cultivated contrasts with the area of the State as an ordinary garden does to a farm. Those who are interested in the future of the State should use all their influence to have this vast unoccupied domain held for those who are to cultivate it. It is believed by men of enlarged views that the true policy of the Federal Government is to withdraw from sale all its public lands, and hold them as the free heritage of the poor under

the homestead law. The wealth of a State is made up of the aggregate wealth of its citizens; its growth in wealth depends upon their aggregate earnings. True economy therefore dictates the placing of every man in a position to add to the wealth of the State by his industry. How can so good a disposition of our public domain be made, therefore, as to give it to the poor, and thereby enable them to become producers who might otherwise be a tax upon the energies of others. Every one hundred and sixty acres actually occupied will not only steadily increase in value, but on an average will turn off more in value each year than the price of its purchase; yet every dollar realized from it from year to year will generally be expended in the support and education of the family occupying it, and the purchase price, if the occupants be compelled to pay it, will hang over him for years, if not paralyzing his energies, at least clouding his hopes. The passage of the homestead law was a step in the right direction. Let all unite in the interest of the laboring men of the country, in the interest of an enlightened humanity, and for the common good of all, in demanding that the public domain be set apart forever as the free inheritance of our own and our immigrant poor. Let us at once demand of the next Legislature a repeal of the law whereby speculators have become possessed of large tracts of swamp and overflowed lands—the very choicest we have. Let these, too, be held, if not without price, at least for those who will cultivate them. Let it be understood no fault is to be found with those who have availed themselves of a bad law; the fault is in the law which permits them to profit off the poor, or what is more frequently the case, embarrass the poor without profit to themselves.

The system of farming hitherto followed is both wasteful and disadvantageous, but it is believed to be wholly the outgrowth of the peculiar embarrassments under which we have labored. Farmers have relied almost wholly upon a single kind of crop. This failing, they have failed. Nothing can be more risky. But it has been heretofore almost impossible for the majority to diversify their crops and combine farming with stock raising, because of the great cost of dividing up their farms with fences so as to admit of this kind of husbandry. But if we would farm profitably this must be done. Meat and bread must be grown together if we would not deteriorate our soil. This is a truth well known to our farmers, and yet one to which we have so far paid little attention. But he who so farms as to exhaust his soil makes a present profit only to insure a future loss. The farmer who grows grain and raises no stock, as too many do, wastes the profits which should be realized in the gleaning of his stubbles, in the utilizing his straw stacks—a profit equal to what farmers make in many parts of the world. The stubble and straw from a grain field, properly cared for, are worth more to the stock raiser than the natural grasses which would grow upon the same land. This shows at once the importance of combining the two interests. As fast as men can prepare themselves to carry on this better system of farming, it is to be hoped they will do so, and until then, in common justice, the obnoxious law requiring A to fence his grain field against the depredations of B's stock should be repealed. Each man should be enabled to possess his own. This policy of discriminating in favor of an inferior against a superior one is a blighting wrong, which has worked a great injury to the State.

Among the very best indications for our future prosperity are the preparations being made for irrigation in that section of the State most needing it—the San Joaquin Valley. This great valley, the most exten-

sive in area and rich in the earthy salts of any we have, is so subject to drought as to make farming exceedingly hazardous. It is time the great rivers penetrating it, which run at full banks during the season their waters are needed by the agriculturist, should be utilized. Nothing gives me such buoyant hopes for the future of this great section as the work now going on for the distribution of the waters of these rivers over the dry but rich plains, for they contain an inexhaustible source of wealth to the farmer, which cannot be estimated, but which far exceeds the value of the golden sands that once lined their banks. The San Joaquin and Tulare Valley, for it is one valley, covers an area of more than one third the size of the State of New York. But unlike New York, there is necessarily no waste land on the whole of it, while the average quality of its soil, to say nothing of its favorable climate, is equal to the very best river bottoms in that State. It is no exaggeration to say, therefore, that this valley, irrigated, as it may be, by the flowing streams nature has provided, is capable of producing a larger agricultural product than the entire State of New York, and of far greater value, because of the superior quality and greater variety of its productions. Among the productions of this great district of country, which may be marketed in the future in almost limitless quantity, are wines, brandies, cotton, and beet sugar. Americans have had little experience in irrigation, and naturally ask what will be the effect of it upon the soil. The answer is, there is no soil needing it which will not be improved by it, if properly applied, and this answer embraces the experience of the world up to the present moment. When should it be applied? For cereals, and in fact most all annuals, from October to May. If applied later, unless there is a growth of trees, alfalfa, or some other crop on the ground to shade it, it would undoubtedly be disadvantageous to light clay loams and kindred soils, causing them to become compact and hard. There is no farming land in this State which will not produce a full crop in the dryest season, if once thoroughly saturated by irrigation, in October, November, or December. From that time on the rainfall will always be sufficient to supply surface moisture, until the sun reaches altitude enough to draw up the supply held below the surface by capillary attraction. For the truth of this assertion, reference is made to a farmer in San Joaquin who flooded a part of his lands in the Winter of eighteen hundred and seventy, harvesting therefrom a full crop that year, and another in eighteen hundred and seventy-one, from the unexhausted moisture from the irrigation of the year before, while his crops on adjoining land entirely failed.

Among the first of new enterprises should be classed that of making sugar from beets. One company engaged in this business, at least, has met with very satisfactory success. I refer to the California Beet Sugar Company, whose works are located at Alvarado, in the County of Alameda. This company has in more than five hundred acres to beets, and notwithstanding the dry season, will make one and one quarter million pounds of sugar, worth in the San Francisco market not less than one hundred and fifty thousand dollars. It will be seen, therefore, that the product even in this worst of seasons we have ever known, will reach three hundred dollars per acre.

The sugar is of the finest quality, and can readily be put into any desirable shape, whether loaf, lump, crushed, granulated, or pulverized. The average annual importation of sugar into the port of San Francisco is something more than fifty million pounds, worth, duties paid, about five million dollars. This is a very considerable drain upon our wealth

and resources. To buy this amount of sugar requires the exportation, at average yield and prices, of the entire crop from more than three hundred thousand acres of wheat, while less than fifteen thousand acres would produce the sugar, with far less drain upon the soil used.

The experiment of making sugar here having proved an entire success in every particular, it is confidently predicted that in four years from to-day we will produce all the sugar consumed in the Pacific States and Territories, and in ten years we will send to other States and countries, of our own production, three times the amount we now import.

There is now quite a large amount of flax raised in this State for the seed alone, no use being made of the fiber. This is a great waste, which should, if possible, be avoided. Cannot some cheap method be devised for preparing this fiber for use, though it may be in the coarsest products, such as grain bags or rope? He who can utilize this material and prevent its waste will confer a great benefit upon the State.

One experiment, at least, upon a scale sufficiently large to test our climate and soil for raising cotton successfully, is being made. A field embracing seventy acres is now growing, on the Merced River, five or six miles below the Town of Snellings. When I had the pleasure of visiting the field, some six weeks ago, the cotton was in a very thrifty condition, with the early seedballs closed. The harvest of the fiber is probably now about commencing, and will continue until November or December. Experienced cotton growers from the Southern States informed me that this field was a fair average of the crops in Louisiana, and would probably yield three fourths of a bale of ginned cotton to the acre. The entire crop was planted and cultivated by three men. This is more ground, I am informed, than the same men could have cultivated in the Southern States. The experiment, therefore, bids fair to prove a satisfactory one, and it is quite probable we may hereafter be able to add cotton to our regular productions.

The raising of grapes and the manufacture of wine and brandy seems now to be firmly established as one of our leading and most profitable industries. There is no longer, I am informed, any difficulty in marketing the entire product at remunerative rates, and it is quite probable the demand will increase faster than the production can be increased. Last year we produced six million gallons of wine, worth three million six hundred thousand dollars, and one hundred and fifty thousand gallons of brandy, worth, duties unpaid, one hundred and twelve thousand five hundred dollars. This year it is estimated we will produce from eight million to ten million gallons of wine, worth say four million five hundred thousand dollars, and two hundred thousand gallons of brandy, worth one hundred and fifty thousand dollars, and it is fair to calculate that this ratio of increase in production and values will be kept up for years to come. It is estimated by our principal wine merchants that one half of our product is consumed by the States to the east of us, while they are regularly shipped to Mexico, South America, Sandwich Islands, Australia, Japan, China, England, and occasional lots to the continent of Europe. From every part of the world to which they are sent fair reports come back as to their excellence, and orders increase, showing that they have a better standing abroad than at home. Of course their reputation has suffered somewhat from unskilled makers, and from counterfeiting. Messrs. I. Landsberger & Co. are now putting up one thousand five hundred dozen per month of their champagne wine, and are unable to supply the demand. What may we not expect from this industry, when we reflect that the entire champagne district of France is not greater in era

than Sonoma county, and yet employs ten thousand men in cultivation of the grape, and ten thousand more in the preparation of the wine for market? We have now thirty-five million bearing vines growing on forty-seven thousand acres. The average yield per acre for the grapes is about sixty dollars, but the choice varieties will yield one hundred dollars or more, and this too on our poorest soil. What more profitable or sure investment can a poor man desire? Uncle Sam gives the land, and his own labor is sufficient to put out a vineyard from which a sure annual revenue may be derived for himself and his children. One of the strange peculiarities of our people, showing their singular attachment to articles of foreign growth and manufacture, may be noted in the fact that while we are sending wine to the four quarters of the globe—a wine that we know to be pure juice of the grape—we imported during last year four hundred and fifty-one thousand nine hundred and forty-seven gallons of wine, costing, duties paid, more than five hundred and fifty thousand dollars.

Would any other people under the sun be guilty of thus patronizing a foreign product and market at the expense of their own, and that, too, at their individual cost?

Time is not afforded me to mention other industries, both in farming and manufacturing, which at least bid fair to succeed, and which will be watched by our people with the deepest interest. In our domestic animals we are making a gradual but steady improvement. That we are taking the pains with our herds which true economy would dictate, however, cannot be contended.

There are many yet who cannot realize the fact that it costs just as much and often more to raise a poor horse or cow than it does a good one; that it costs just as much to raise a sheep which will shear three pounds of inferior wool as it does a thoroughbred Merino or Cotswold, which will yield a fleece of six pounds of superior quality.

If one will pay the cost of raising, what an enormous profit must the other yield? If I was called upon to name the class of persons who have done most to advance the best interests of the State, I should unhesitatingly say, that according to their numbers, those men who have employed their time and experience and embarked their capital in the improvement of our domestic animals are entitled to this great distinction. From the improvement already effected, I think it safe to say the value of our herds has been more than doubled. Let the improvement go on until it shall be our boast to say, California raises none but the best.

To the ladies, whose splendid exhibition makes up one of the most pleasing features of this great display of labor and skill, not being a judge of the materials so artistically arranged by their fair hands, I only feel competent to say, that for the general interest they have added to the Fair they are certainly entitled to the thanks of the Society. On the whole, we may justly claim to be making fair progress as a people. But should we be content with this? No; not so long as we have an idle man among us, or a physical want or comfort unsupplied; not so long as we are dependent upon any other country for a single article which we can produce; not so long as we have to depend upon other countries for ships to carry our surplus products away. This shipping can and must be supplied by ourselves. The world does not furnish such materials for wooden and composite ships as are found on this coast.

We have now a cheap process for preserving this wood from rot, and therefore making it as durable and even more desirable than iron. Ship building should at once become a leading industry. We have now just begun to realize something of that Oriental trade to which we have been looking forward for a long time, expecting it to add largely to our wealth, and give an impetus to all our industries. Within the last thirty days there have been received from China and Japan more than two million nine hundred and forty thousand dollars worth of merchandise for transition across the continent. This is but the beginning of a trade which will revolutionize the old currents of commerce. Within a few years San Francisco ought to become the emporium for the exchange of Oriental products and the monetary exchanges of the world. Her position commands both these, and she will some day attain to this commercial and monetary greatness. It depends upon us to say how soon that day will be reached.

We have great interests confided to our care. Let us remember that in activity there is life, and that indolence is mental and physical death.

We should be duly thankful that the great disposer of events has cast our lot in this favored land, with its genial climate, its grand scenery, its limitless productions, and its possible future, more grand, more glorious than any spot of earth upon which the sun shines. Let it be the ambition of each of us to see who shall be entitled to have his name written highest among those who have advanced the great interests of the commonwealth.

FINANCIAL REPORT

OF THE

STATE AGRICULTURAL SOCIETY

FOR

THE YEAR 1871.

Date.	On what account.	Amount.
1871.	RECEIPTS.	
January 28	From A. A. Wood, rent of Park	$305 00
"	Memberships	300 00
March 1	A. A. Wood, rent of Park	305 00
April 1	A. A. Wood, rent of Park	305 00
April 11	State appropriation, 1870	3,000 00
May 9	A. A. Wood, rent of Park	305 00
June 12	A. A. Wood, rent of Park	305 00
July 3	A. A. Wood, rent of Park	200 00
July 13	A. A. Wood, balance of month's rent	105 00
August 5	A. A. Wood, rent of Park	305 00
August 15	On warrant of State appropriation	5,000 00
"	Entrance	2,740 00
August 19	From C. B. Polhemus, entrance money	200 00
Sept. 9	A. T. Renwick, amount drawn by Society premium last Fair	20 00
"	A. A. Wood, rent of Park	240 00
Sept. 15	Chase & Bowley, pool privilege	1,750 00
Sept. 18	Membership tickets sold since last election, fifty-four, at $5 each	270 00
"	Bar privileges	105 00
"	Entrance to two-year-old race	75 00
"	Receipts at Park, per T. Hall	2,078 75
"	Receipts at Pavilion, per J. Tingman	2,459 50
"	Entrance to race, per E. Mills, at bank	930 00
Sept. 19	Receipts at Park, per T. Hall	2,227 00
"	Receipts at Pavilion, per J. Tingman	1,455 00
"	Entries to race, per E. Mills, at bank	790 00
"	Entries to race, per Beck	2,700 00

Date.	On what account.	Amount.
Sept. 20.....	At Park, per T. Hall.....	$1,802 35
"	At Pavilion, per J. Tingman.....	1,308 90
"	Entries to race, per E. Mills.....	620 00
Sept. 21.....	At Park, per T. Hall.....	2,619 17
"	At Pavilion, per J. Tingman.....	1,352 50
"	Entries to race, per E. Mills.....	740 00
Sept. 22.....	At Park, per T. Hall.....	1,751 55
"	At Pavilion, per J. Tingman.....	1,021 55
"	Entries to races, per E. Mills.....	800 00
"	E. Parsons, cider privilege.....	51 00
Sept. 23.....	At Park, per T. Hall.....	1,364 25
"	At Pavilion, per J. Tingman.....	490 50
"	Entries to races, per E. Mills.....	720 00
Sept. 29.....	From R. L. Robertson & Son, rent of feed rooms at Park.....	50 00
October 3..	Received from A. A. Wood for rent of Park.....	220 00
October 6..	Justin Gates & Bros., rent of soda privilege.....	50 00
"	G. N. Swezy, on silver pitcher of last year (over value)	25 00
"	State warrant appropriation.....	3,000 00
"	Received of Thomas Orchard, diploma frame.....	2 25
"	J. C. Devine & Co.....	5 00
"	S. I. Gregory.....	5 00
	Total.....	$44,044 27

On what account.	Amount.
DISBURSEMENTS.	
By balance overdrawn on treasury	$3,151 54
Cash paid H. C. Kirk, premium of 1870	5 00
G. W. Whitlock, fixing seats for election	4 50
H. S. Crocker & Co., Sacramento Directory	3 50
D. Bush, balance gas-fitting bill	84 35
L. Deitz, premium 1870	20 00
Ben. Bullard, Jr., Clerk election	4 00
L. Stanford, one share Union Park stock	100 00
Locke & Lavenson, door mat	3 50
Daily Record, advertising	3 00
Daily Bee, advertising	5 00
F. E. Patton, Clerk election	4 00
R. J. Merkeley, premium 1870	25 00
A. B. Gilbert, premium 1870	30 00
Telegram	1 25
Expressage on *Turf Register*	3 00
Post Office stamps	10 00
Expressage on seed	1 00
Newspapers containing report of proceedings of Board	1 00
Robert Beck's salary for February	150 00
J. E. Parker, bridle	10 00
Whittier, Fuller & Co., diploma frames	13 50
A. J. Steiner, premium 1870	50 00
C. W. Clark, one share Union Park stock	100 00
C. W. Clark, one stall at Park	7 00
Robert Allen, bill	78 00
D. Gardner, wood	10 00
E. F. Aiken, trees	193 25
Jas. T. Stratton, premium, 1870, $50; trees, $21	71 00
R. S. Carey, one share Union Park stock	100 00
T. Durkin, trimming trees	5 00
J. B. Turner, trimming trees	19 50
I. N. Hoag's bill	150 00
Robert Beck's salary, March	150 00
Hanks & Wilson, setting tanks	16 00
Central Pacific Railroad Company, four water tanks	100 00
Telegrams	1 00
Expressage on books	3 50
Wells, Fargo & Co., envelops	10 00
Postage stamps	10 00
Capital Savings Bank, for $160 currency, at 91¼, and paid assessment to Turf Congress, $80 currency, and new rules, $80 currency—$160	146 00
San Francisco *Examiner*, to send circulars	6 00
Secretary's traveling expenses during 1870	300 00
W. Williamson, Course Clerk, 1870	25 00
B. F. Hastings, one share Union Park stock	100 00

On what account.	Amount.
Rural Press, advertising	$ 6 00
E. F. Aiken, trees	10 00
A. A. Wood, for boxing and watering trees	78 75
Robert Beck, salary for April	150 00
I. N. Hoag, account of salary	200 00
City taxes on Union Park	42 75
Peter Burnes, premium 1870	5 00
A. Steiner, filling diplomas	9 75
A. A. Wood's bill	36 00
Robert Beck's salary for May	150 00
I. N. Hoag, account salary	100 00
Central Pacific Railroad Company, spout and door	6 50
Dr. Harkness, one share Union Park stock	100 00
Dr. Cluness, one share Union Park stock	100 00
Post Office bill	12 00
Gleason Brothers' bill	90 62
Hunt & Wilson's bill	90 00
Robert Beck's salary for June	150 00
A. A. Wood's bill	55 00
I. N. Hoag, on account salary	100 00
Miss J. N. Andnair, premium 1870	3 00
John A. Smith, one share Union Park stock	100 00
Robert Beck, salary for July	150 00
J. S. Harbison, premium 1870	5 00
I. N. Hoag, on account of salary	100 00
H. H. Pearson, one share Union Park stock	100 00
E. M. Smith, premium 1870	15 00
I. N. Hoag, on account salary	100 00
W. Bacon, carpenter	20 00
Dusenbury, carpenter	20 00
T. Marshall, carpenter	20 00
Todhunter, carpenter	20 00
A. Keithley, carpenter	20 00
P. Chatterton, carpenter	20 00
Insurance on building	158 50
I. N. Hoag, on salary order	32 13
H. Cooksley, masonry	20 00
I. N. Hoag, salary	114 72
Fred. Werner, sixteen stalls at eight dollars	128 00
R. T. Brown, purse No. 1	1,000 00
R. T. Brown, purse No. 2	1,000 00
R. T. Brown, purse No. 3	800 00
R. T. Brown, purse No. 4	1,500 00
R. T. Brown, purse No. 5	1,000 00
R. T. Brown, purse No. 6	1,000 00
R. T. Brown, purse No. 7	600 00
R. T. Brown, purse No. 8	1,200 00
R. T. Brown, purse two-year-olds, $100; entrance added, $75	175 00
R. T. Brown, boat purse	100 00
R. T. Brown, purse No. 9	1,000 00

On what account.	Amount.
R. T. Brown, purse No. 10	$1,500 00
R. T. Brown, purse No. 11	1,200 00
R. T. Brown, purse No. 12	750 00
R. T. Brown, special purse	50 00
R. L. Robertson & Son, feed	93 00
Booth & Co., shakes	250 00
R. Todhunter, carpenter	110 00
R. Otis, laborer	21 00
John Tenbrook, labor	36 00
F. M. Marshall, carpenter	124 00
A. Keathley, policeman, six days	18 00
A. Keathley, laborer	67 00
Isaac Galloway, labor, six days	18 00
M. T. Howard, labor, six days	33 00
W. J. Robertson, horse hire	33 00
James Casserly, horse hire	24 00
P. McGowan, policeman	18 00
Samuel Deal, policeman	24 00
John Wooster, policeman	24 00
Mrs. Jackson, chambermaid	15 00
M. Dusenberry, carpenter at Park	92 00
Orleans Hills Vinicultural Association, premium	20 00
P. Chatterton, carpenter	165 00
R. S. Carey, labor	32 50
R. S. Carey, wood	42 00
William Collins, policeman	18 00
Mrs. M. Carrington, premium	5 00
James Harvey, Marshal	33 00
R. Rockforth, police	15 00
W. M. Millard, stair keeper	18 00
H. H. Holton, stair keeper	18 00
John Studeras, premium	3 00
Mrs. N. Clark, premium	12 00
William Harron, ticket clerk	30 00
W. T. Crowell, doorkeeper	27 00
D. J. Simmons, doorkeeper	24 00
Isaac Galloway, labor	27 00
S. H. Davis, hardware bill	230 40
R. Johnson, cleaning closet at Park	40 00
Eph. Burns, labor	10 00
Central Pacific Railroad Company, tank	60 00
Miss Annie Gerber, premium	3 00
John Nickerson, police	18 00
E. G. Jefferis' bill	7 50
James Johnson, whitewashing and cleaning Pavilion	99 00
O. C. Casey's bill	4 00
S. Cotton, labor at Pavilion	33 00
G. W. Whitlock, labor	118 00
James Contell's bill	62 50
W. Cortus' bill	15 88

On what account.	Amount.
Jesse Slaughter, labor	$2 25
W. Corsaw, premium	9 00
A. A. Gurnsey, clerk	18 00
Mrs. Sago, premium	5 00
W. C. Burnham, labor	2 00
Wells, Fargo & Co., marine glass	38 00
W. B. Ludlow, carpenter, $37 50; doorkeeper, $21	58 50
T. C. May, drayage	35 75
G. T. Glover, clerk	36 00
Frankie Swift, errand boy	12 00
Mrs. T. L. Chamberlin, premium	5 00
J. J. Cass, repairing locks	3 50
Mass & Co., premium	2 50
A. H. Estill, entry clerk	30 00
Marysville *Standard*, advertising	12 00
F. Foster's bill	15 00
L. Lothhammer, music	624 00
Mrs. E. F. Aikins, premium, $84; Mrs. E. F. Aikins, premium, $17	101 00
O. W. Wallace, gatekeeper	18 00
O. C. Wheeler, Jr., labor	42 00
G. W. Mayberry, labor	83 50
M. Crome, labor	91 50
E. H. Pomroy, clerk	30 00
W. Schaumfleffle's bill	6 00
C. Honeywell, carpenter	60 00
C. L. Knowles, superintendent carpentering	117 00
A. Hamberger's bill	54 00
John Tingman, ticket clerk	30 50
John Isaacs, police	24 00
Hiram Clock, labor	92 00
E. Mills' expenses	500 00
B. Calhoun, one share Union Park stock	100 00
Phil. Fisher, premium	8 00
C. F. Reed, expenses	1,000 00
John Calvin, hauling gravel	6 00
Samuel Deal, ticket returned	5 00
P. J. Hopper, advertising	10 00
S. Dodge, boring well	59 00
R. Jones, straw	257 40
Henry Heiser, premium	3 00
W. R. Tolle, police	18 00
D. Stewart, police	18 00
A. Johnson, labor	69 00
A. H. Cram, engineer	66 00
F. Manuel, fireman	31 50
H. S. Crocker & Co., stationery, etc	289 38
E. Moore, drayage	75 50
Thomas O'Brian, display flowers	20 00
Mrs. S. Sims, premium	5 00

On what account.	Amount.
W. S. Frazier, hauling	$ 4 00
W. Crump, watchman	40 00
James Johnson, labor at Pavilion	36 00
George Duprey, board of Japanese	45 00
W. Burk, hauling	4 00
Hill & Knaugh, premium	50 00
James Anthony & Co., advertising, etc	180 50
Mrs. S. M. Hover, premium	8 00
H. S. Beals, hay	115 26
H. M. Bernard, premium	30 00
C. H. Shear, premium	65 00
Daily Record, advertising, etc	97 50
W. F. Fills, bill posting	3 00
Robert Cown, premium	10 00
Hobson & Ayers' bill	455 86
Sacramento Gas Company's bill	220 00
D. H. Quinn's bill	14 00
F. Adams, labor	15 00
Fourth Avenue House, board of Japanese	44 00
Hunt & Anderson's bill	514 91
P. A. Espina's account	50 00
A. Maillard, premium	70 00
G. Schmeiser's bill	22 14
G. H. Baker, diploma	100 00
James Carolan & Co., truck	13 25
Van Heusen & Huntoon	30 00
W. P. Michener's bill	79 42
H. Cantwell, clerk	30 00
G. H. Swinerton's bill	18 76
P. Burns, premium	15 00
W. E. Nichols' bill	12 50
O. Kuttschmitt, premium	60 00
Nash, Miller & Co., premium	5 00
E. C. Chaimbers' bill	24 00
F. A. Muller, premium	50 00
W. Sutton, police	18 00
I. N. Hoag, on account of salary	208 15
Western Union Telegraph Company	4 00
Spurgeon Bros.' bill	65 00
F. Screiver's bill	20 00
Hartwell, Hotchkiss & Co.'s bill	53 20
N. L. Drew & Co., on account	500 00
Friend & Terry, lumber	84 95
N. Clark & Co., premium	18 00
E. Soule, premium	30 00
John Smith, premium	8 00
Capt. Robinson, assistant clerk	5 00
Sacramento Reporter's bill	24 00
N. L. Drew & Co., balance of bill	817 12
J. R. Nickeson, premium	150 00

On what account.	Amount.
James Sunderland, carpenter	$24 00
Fred. MacCrellish, advertising	40 00
Henderson & Clark, premium	15 00
F. M. Chapman's bill	52 00
A. S. Grenlaw, premium	25 00
Dewey & Co., advertising	132 50
Chas. Dell, clerk	18 00
Miss J. M. Pierce, premium	3 00
Mrs. C. James, premium	3 00
John Breuner, premium	90 00
R. Woods' bill	12 00
Women's Coöperative Company, premium	18 00
Mrs. Preston's bill	15 00
J. K. Jewell, premium	10 00
A. Meiss, labor	76 00
C. Coyle	5 00
J. S. Williams, police	18 00
J. S. Williams, watchman	14 00
W. B. Ready, premium	35 00
James Perry, hauling	8 00
J. C. Sedley, doorkeeper	27 00
Alex. Mackey, premium	10 00
Leonard & Cadwalader's bill	30 00
Mrs. Anderson, premium	5 00
Gillig, Mott & Co.'s bill	4 00
Post Office bill	3 00
San Francisco *Spirit of the Times*, advertising	60 00
Robert Beck, premium	50 00
Bills and premiums paid at Pavilion, as per vouchers	2,584 00
Expenditures, as per vouchers	1,102 85
Premiums paid at Park, as per vouchers	3,255 00
William Lee, services	69 00
Thomas O'Brien, services	111 00
Daily Bee, advertising	25 25
Benjamin Bullard, Clerk	70 00
Dewey & Co., advertising	4 75
Russell & Winterburn's bill	527 50
G. G. McCurdy, services	24 00
Bean & Co., advertising	133 00
George W. Wallace	148 00
O. C. Wheeler, Superintendent	200 00
Mrs. O. C. Wheeler, purses	12 00
Dorsey & Lowry	5 00
J. C. Devine & Co.'s bill	6 25
F. S. Malone's bill	30 00
H. A. Rawson, premiums	85 00
California Stock and Poultry Association, premium	60 00
C. Detten, premium	20 00
Newhall & Culvertson	35 00
Wells, Fargo & Co., freight on fruit	61 20

On what account.	Amount.
R. T. Brown	$500 00
A. Music, premium	10 00
C. E. Paine, livery	10 00
J. Builder, police	18 00
J. C. Meussdorffer, premium	5 00
R. C. Terry & Co.'s bill	4 00
Robert Beck, salary for August, September, and October	450 00
J. Lipman & Co.'s bill	2 00
Dale & Co.'s bill	7 37
C. H. Krebs' bill	179 13
William Corliss' bill	6 00
J. R. Carroll & Co., hay	900 00
B. Dennery's bill	51 42
E. Mills, interest on Union Park stock	133 00
P. A. Espina, balance of salary	15 00
L. B. Harris, Entry Clerk	65 00
I. N. Hoag, salary	150 00
A. A. Wood's bill	143 50
B. N. Bugbey, premium	70 00
Nevada Ice Company's bill	24 60
William Caswell, posting bills	7 00
Charles J. Torbett, Clerk	30 00
Wells, Fargo & Co., freight	3 13
Huntington & Hopkins' bill	25 38
Hasselgren & Wilson's bill	10 00
Summit Ice Company's bill	11 37
I. L. Merrill's bill	59 50
H. C. Kirk & Co.'s bill	10 50
Locke & Lavenson	24 00
R. Ireland's bill	3 00
Thomas Hall, Clerk	30 00
California Jewelry Company, medals	385 00
B. G. Perry, premium	13 00
Bradwell, stairkeeper	18 00
J. Nickeson, labor	69 00
C. Collins, police	18 00
D. O. Mills & Co., interest	184 83
P. A. Espina, filling diplomas	139 25
I. N. Hoag, salary	150 00
Robert Beck, salary	150 00
Total disbursements for 1871	$44,191 87

SPEED PROGRAMME---1871.

MONDAY, SEPTEMBER 18TH.

FIRST RACE—CLASS I.

Trotting Race—Mile heats; three in five; free for all stallions. Purse, one thousand dollars; first horse, five hundred dollars; second horse, two hundred and fifty dollars; third horse, one hundred and fifty dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. address.	Name.	Driver.
S. B. Whipple	San Francisco	b. h. Ajax	John McLelland
William Hamilton		b. h. Alexander	John Mackey
Singleterry & Boggs	Princeton	blk. h. Blackbird	Dan. Dennison
Cornelius Staggs	San Francisco	blk. h. Hiram Woodruff	J. W. Driscoll
Peter Goodhue		s. h. Copperhead	

Result.

Ajax	2	2	dis.
Alexander	...	...	...
Blackbird	1	1	1
Hiram Woodruff	dis.		
Copperhead	dis.		

Time—2:28; 2:32½; 2:54¾.

Judges—Charles F. Reed, S. T. Brewster, Edgar Mills.

SECOND RACE—CLASS II.

Trotting Race—Mile heats; three in five; in harness; free for all horses that have never beaten three minutes.

Entries.

By whom entered.	P. O. Address.	Name.	Driver.
Mr. Bailey	San Francisco	br. g. Surprise	A. Cummings
Mr. Corbetts		br. m. Highland Mary	H. L. Spencer
John Boggs	Princeton	gr. m. May Howard	Dan. Dennison
Charles McLaughlin	San Jose	rn. m. Nell	J. B. Hinkle
P. A. Finnegan	San Francisco	s. g. Fred	
Perry Gwinnet		rn. g. Berkley Boy	
C. B. Polhemus	Santa Clara	b. c. Forrest	John Gordon.

Result.

Surprise			
Highland Mary	d. h.	2	2 2
May Howard	d. h.	1	1 1
Nell			
Fred			
Berkley Boy			
Forrest	2 dis.		

Time—2:36½; 2:34; 2:36½; 2:36¾.

TUESDAY, SEPTEMBER 19TH.

FIRST RACE—CLASS III.

Running Race—Mile and repeat; free for all three year olds. Purse, eight hundred dollars; first horse, four hundred dollars; second horse, two hundred dollars; third horse, one hundred and twenty-five dollars; fourth horse, seventy-five dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Age.	Pedigree.
George Treat	San Francisco.	g. c. Gov. Stanford	3 yrs.	By Norfolk, dam Fannie Hopper.
F. G. Singleford	Colusa	b. c. Captain Jinks	3 yrs.	By Norfolk, dam by Belmont.
John Boggs	Princeton	Mark Twain	3 yrs.	By Norfolk, dam Ariadne, by Belmont.
J. C. Taylor	Tehama	Nelly Brown	3 yrs.	By Rifleman, by imported Sovereign.
R. T. O'Hanlon	San José	br. f. ——	3 yrs.	By Norfolk, dam Santa Clara, by Owen Dale.
John Hall	San José	Ironclad		By Woodburn, dam Peggy Ringgold.

Result.

Governor Stanford			dis.
Captain Jinks	5	4	
Mark Twain	2	5	
Nelly Brown	4	2	
———	3	3	
Ironclad	1	1	

Time—1:46; 1:46½.

Judges—C. F. Reed, John M. Duncan, S. T. Brewster.

SECOND RACE—CLASS IV.

Running Race—Mile heats, three in five; free for all. Purse, fifteen hundred dollars; first horse, eight hundred dollars; second horse, four hundred dollars; third horse, two hundred dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Age.	Pedigree.
Geo. Treat	San Francisco.	br. c. Oliver Cromwell	4 yrs.	By Lodi, dam Annette.
Geo. A. Johnson		b. c. Sheridan	4 yrs.	By Norfolk, dam Bonny Belle.
Thos. Atchison	Sacramento	g. c. Thos. Atchison	4 yrs.	By Norfolk, dam Mary G.
James Shelton		br. m. Nell Flaherty.	4 yrs.	By Rifleman, by Belmont.
J. C. Taylor	Tehama	b. m. ———	4 yrs.	By Rifleman, by imported Sovereign.
Theo. Winters	Davisville	b. c. Bois d'Arc	4 yrs.	By Norfolk, dam Liberty by Rifleman.
John Hall		b. m. Alice May	4 yrs.	By Woodburn, dam Peggy Ringgold.

Result.

Oliver Cromwell	6	3	3
Sheridan	2	6	4
Thos. Atchison	5	2	2
Nell Flaherty	1	1	1
———	0	0	0
Bois d'Arc	3	5	6
Alice May	4	4	5

Time—1:45½; 1:45¼; 1:46.

WEDNESDAY, SEPTEMBER 20TH.

FIRST RACE—CLASS V.

Trotting Race—Mile heats; three in five; in harness; free for all horses that have never beaten 2:30. Purse, one thousand dollars; first horse, five hundred dollars; second horse, two hundred and fifty dollars; third horse, one hundred and fifty dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Driver.
Mr. Slicer	San Francisco	b. c. Frank Rhoads, formerly John Conness	Col. Dickey.
Wm. Hamilton		b. h. Alexander	John Mackey.
E. M. Skaggs	Sacramento	b. m. Mary Davis	H. L. Spencer.
Singleterry & Boggs	Princeton	blk. h. Blackbird	
E. H. Miller	Sacramento	b. m. May Fly	A. F. Smith.
John Boggs	Princeton	s. g. Jerome	Dan. Dennison.
John Dickerson	Woodland	b. g. California Dexter	Barney Rice.
Peter Goodhue		s. h. Copperhead	
Ben. E. Harris	San Francisco	b. g. Regulator	

Result.

Frank Rhoads	3	2	3	3
Alexander	...	...	...	...
Mary Davis	dis.			
Blackbird	...	...	...	...
May Fly	2	1	1	1
Jerome	1	3	2	2
California Dexter	5	4	4	5
Copperhead	dis.			
Regulator	4	5	5	4

Time—First horse—2:33; 2:34; 2:33½; 2:34¾.
Second horse—2:34¾; 2:34¼; 2:33¾; 2:34¾.

Fines—Dan. Dennison, twenty-five dollars; Barney Rice, five dollars.

SECOND RACE—CLASS VI.

Trotting Race—Mile heats; three in five, in harness; free for all horses that have never beaten 2:50. Purse, one thousand dollars; first horse, five hundred dollars; second horse, two hundred and fifty dollars; third horse, one hundred and fifty dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Driver.
C. H. Sisson	Stockton	blk. m. Sisson Girl, formerly Black Nance	M. Ryan.
Samuel Daniels	Chico	b. g. Dutchman	
H. L. Spencer	San José	br. m. Highland Mary	
C. B. Polhemus	San José	b. c. Forrest	John Gordon.
John Boggs	Princeton	gr. m. May Howard	Dan. Dennison.
Charles McLaughlin	San José	rn. m. Nell	J. B. Hinkley.

Result.

Sisson Girl	2	2	2	2
Dutchman	...	...	...	...
Highland Mary	3	1	3	3
Forrest	dist.			
May Howard	1	3	1	1
Nell	...	...	...	...

Time—First horse—2:37½; 2:36¼; 2:37¾; 2:39¼.
Second horse—2:39; 2:37; 2:40.

THURSDAY, SEPTEMBER 21st.

First Race—Class VII.

Pacing Race—Mile heats, three in five; Mayo to wagon, Defiance, or any other horse which may be imported after this date, in harness; and all others to go as they please. Purse, six hundred dollars; first horse, three hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Driver.
S. C. Bowley	San Francisco	s. g. Longfellow	Pat. Ferrell.
A. F. Smith	Sacramento	s. g. Albany Boy	A. F. Smith.
A. C. St. Johns	San José	r. g. Defiance	H. L. Spencer.

Result.

Longfellow	3	2	3
Albany Boy	2	3	2
Defiance	1	1	1

Time—First horse—2:25; 2:22½; 2:23.
Second horse—2:27½; 2:26; 2:33.

SECOND RACE—CLASS VIII.

Running Race—Two mile heats; free for all. Purse, twelve hundred dollars; first horse, six hundred dollars; second horse, three hundred dollars; third horse, two hundred dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Age.	Pedigree.
George Treat.....	San Francisco...	b. c. Oliver Cromwell	4 yrs.	By Lodi, dam Annette.
Geo. A. Johnson...	.....	b. c. Sheridan.....	4 yrs.	By Norfolk, dam Bonny Belle.
Thomas Atchison..	Sacramento.....	g. c. Thos. Atchison..	4 yrs.	By Norfolk, dam Mary G.
Singleterry and Funk	Colusa	b. c. Capt. Jinks.....	3 yrs.	By Norfolk, dam Belmont.
Nathan Coombs...	Napa	b. c. Gift.....	3 yrs.	By Lodi, dam Ruby by Winnebago.
James Shelton.....	Tehama	br. m. Nell Flaherty..	4 yrs.	By Rifleman, dam Jennie Hall.

Result.

Oliver Cromwell.....	.. ..
Sheridan	dist.
Thomas Atchison.....	1 1
Captain Jinks.....	.. ..
Gift	.. ..
Nell Flaherty.....	2 dis

Time—3:37½; 3:41¼.

FRIDAY, SEPTEMBER 22D.

FIRST RACE—CLASS IX.

Trotting Race—Mile heats; three in five; free for all horses that have never beaten 2:35. Purse, one thousand dollars; first horse, five hundred dollars; second horse, two hundred and fifty dollars; third horse, one hundred and fifty dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Driver.
S. B. Whipple	San Francisco	b. h. Ajax	J. McLellan.
H. L. Spencer	San José	b. m. Flora	
John Boggs	Princeton	gr. m. May Howard	Dan. Dennison.
John Dickenson	Woodland	br. g. Danger	Barney Rice.
Charles McLaughlin	San José	rn. m. Nell	J. B. Hinkley.
E. M. Skaggs	Sacramento	b. m. Lady Belle	
Pat. Finnegan	San Francisco	b. m. Peanuts	
A. Maillard	San Rafael	b. m. Lady Slasher	Mr. Ellis.
C. Staggs	San Francisco	blk. h. Hiram Woodruff	James Driscoll.
Peter Goodhue		s. h. Copperhead	
J. T. Wilson		s m. Coquette	
John Boggs	Princeton	g. m. Marysville Queen	

Result.

Ajax	...	...	...	...	...
Flora	...	...	...	...	...
May Howard	1	2	1	3	4
Danger	...	...	...	...	...
Nell	...	...	...	...	...
Lady Belle	...	...	...	...	...
Peanuts	4	3	3	2	2
Lady Slasher	2	1	2	1	1
Hiram Woodruff	dis.				
Copperhead	5	5	4	5	dis.
Coquette	3	4	5	4	3
Marysville Queen	...	...	...	...	...

Time—First horse—2:36¼; 2:36½; 2:40; 2:36½; 2:37½.
Second horse—2:36½; 2:38¼; 2:40¼; 2:37½; 2:40¾.

Fines—Mr. Finnegan, five dollars; Mr. Farrell, five dollars; Dan. Dennison, five dollars.

SECOND RACE—CLASS X.

Trotting Race—Mile heats; three in five; in harness; free for all horses. Purse, one thousand five hundred dollars; first horse, eight hundred dollars; second horse, four hundred dollars; third horse, two hundred dollars; fourth horse, one hundred dollars.

Entries.

By whom entered.	Residence.	Name.	Driver.
Mr. Slicer	San Francisco	b. g. Frank Rhoads (formerly John Conness)	Colonel Dickey
E. M. Skaggs	Sacramento	b. m. Mary Davis	H. L. Spencer
John Boggs	Princeton	s. g. Jerome	Dan. Dennison
E. H. Miller	Sacramento	b. m. May Fly	A. F. Smith
John Dickenson	Woodland	b. g. California Dexter	Barney Rice
Benjamin E. Harris	San Francisco	b. g. Regulator	

Result.

Frank Rhoads	2	3	5	1	1	d. h.	1	
Mary Davis	...	...	...	...	...	...	...	...
Jerome	4	4	1	2	2	d. h.	3	
May Fly	1	1	2	3	3	2	2	
California Dexter	3	2	3	4	4	...	...	
Regulator	5	5	4	...	...	...	...	

Time—First horse: 2:33; 2:33¼; 2:32½; 2:30½; 2:33½; 2:33¼; 2:34½.
Second horse: 2:34; 2:33¾; 2:32¾; 2:30½; 2:33¾; 2:33¼.

SATURDAY, SEPTEMBER 23D.

FIRST RACE—CLASS XI.

Running Race—Three mile heats; free for all. Purse, one thousand two hundred dollars; first horse, six hundred dollars; second horse, three hundred dollars; third horse, two hundred dollars; fourth horse, one hundred dollars.

By whom entered.	P. O. Address.	Name.	Age.	Pedigree.
George Treat	San Francisco.	br. c. Oliver Cromwell	4 yrs.	By Lodi, dam Annette.
Geo. A. Johnson		b. c. Sheridan	4 yrs.	By Norfolk, dam Bonny Belle.
William Cavod		b. c. Pill Box	4 yrs.	By Norfolk, dam Ada C.
Theodore Winters.	Davisville	b. c. Bois d'Arc	4 yrs.	By Norfolk, dam Liberty by Rifleman.
James Saterlee	San José	b. g. Moses Taylor		

Result.

Oliver Cromwell	1
Sheridan	...
Pill Box	dist.
Bois d'Arc	...
Moses Taylor	...

SECOND RACE—CLASS XII.

Running Race—Mile heats; free for all beaten horses. Purse, seven hundred and fifty dollars; first horse, four hundred dollars; second horse, two hundred dollars; third horse, one hundred dollars; fourth horse, fifty dollars.

Entries.

By whom entered.	P. O. Address.	Name.	Age.	Pedigree.
John Hall	Alvarado	b. m. Alice May	4 yrs.	By Woodburn, dam Peggy Ringgold.
Theo. Winters	Solano Co.	b. c. Bois d'Arc	4 yrs.	By Norfolk, dam Liberty by Rifleman.
J. C. Taylor	Tehama			
G. A. Johnson		Sheridan	4 yrs.	By Norfolk, dam Bonny Belle.

Result.

Alice May	1	1
Bois d'Arc	2	2
———	4	3
Sheridan	3	...

Time—1:47½; 1:46¼.

PREMIUMS AWARDED IN 1871.

FIRST DEPARTMENT.

CLASS I.—THOROUGHBRED HORSES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Stallions.		
Nathan Coombs	Napa	Best stallion, four years old and over	Lodi	$75
John Hall	Alvarado	Best stallion, three years old and over	Norfolk	$50
John Boggs	Colusa	Best stallion, two years old and over	Tom Merry	$40
John Hall	Alvarado	Best stallion, one year old and over	Alic	$30
John Hall	Alvarado	Best colt, under one year	Bally	$20
		Mares.		
John Hall	Alvarado	Best mare, four years old and over, with colt	Peggy Ringgold	$60
A. D. Maillard	San Rafael	Best mare, four years old and over	Hennie Farra	$50
R. T. Leet	Sacramento	Best mare, three years old	Fringe	$40
John Hall	Alvarado	Best mare, two years old	Abi	$30
Theo. Winters	Solano	Best mare, one year old.	Laura Barnes	$25
A. D. Maillard	San Rafael	Best mare colt, under one year	Bell	$20
		Families.		
Theo. Winters	Solano	Best thoroughbred sire, with not less than ten of his colts, all thoroughbred	Norfolk	$100
John Hall	Alvarado	Best thoroughbred dam, with not less than four of her colts, all thoroughbred	Peggy Ringgold	$60
Alexander Ely	San Francisco.	Best stallion, other than thoroughbred, with not less than ten of his colts	Alexander	$75
Daniel Flint	Sacramento	Best dam, other than thoroughbred, with not less than three of her colts	Nelly Bly	$50
S. B. Whipple	San Mateo	Stallion	Speculation	Special, silver goblet $30

CLASS II.—HORSES OF ALL WORK.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Stallions.		
Joshua Reeves...	Placer County	Best stallion, four years old and over.....	Vibrator	.....$40
R. A. Branton...	Solano County	Best stallion, three years old	Tickle My Fancy	.....$30
W. D. Ashley...	Stockton	Best stallion, two years old	Bismarck.....	.....$20
S. B. Whipple...	San Mateo.....	Best stallion, one year old	Speculation, Jr..	.....$15
		Mares.		
G. W. McWain.	Chico	Best mare, four years old and over, with colt.....	Julia Ann.....	.....$40
John Howes.....	San Francisco	Best mare, four years old and over.....	Lady Grant.....	.....$30
Alexander Ely...	San Francisco	Best mare, three years old	Dolly	.....$20
S. B. Whipple...	San Mateo.....	Best mare, two years old	Ada Whipley....	.....$15
S. L. Monday ...	Cacheville	Best mare, one year old.	Wild Pigeon.....	.....$10

CLASS III.—GRADED HORSES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Stallions.		
David Berry.....	Oakland	Best stallion four years old and over.	Henry Williamson	.....$50
D. M. Downey...	Solano County	Best stallion three years old	Ironclad	.....$40
J. D. Carr.....	Monterey	Best stallion two years old.....	Membrino Patchen, Jr.....	.....$30
A. Musick.....	Sacramento ...	Best stallion one year old	Selkirk.....	.....$20
Alexander Ely...	San Francisco	Best colt under one year old, without reference to sex	No Name.....	.....$20
		Mares.		
Jas. A. Merritt..	Napa	Best mare four years old and over	Clara Hastings ..	.....$40
C. H. Shear.....	Sacramento ...	Best mare three years old	Lily Shear.....	.....$30
S. B. Whipple...	San Mateo.....	Best mare two years old	Dot	.....$20
C. H. Shear.....	Sacramento ...	Best mare one year old..	Peggy McGee...	.....$15

CLASS IV.—DRAFT HORSES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Stallions.		
John Dardis.....	Petaluma.....	Best stallion four years old and over	Ottawa Chief....	.....$40
R. W. Pemberton	Vallejo	Best stallion three years old	Prince June.....	.....$30
Daniel McCray..	San José	Best stallion one year old	Black Sand.....	.....$15
		Mares.		
John Neal.....	Sacramento ...	Best mare four years old and over, with colt.....	Eliza	.....$40
F. M. Shepler....	Sacramento ...	Best mare three years old	Julia	.....$25
A. H. Thomson..	Folsom	Best mare two years old..	Mignoni.....	.....$20

CLASS V.—ROADSTERS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Stallions.		
J. E. Miller.....	Sacramento....	Best stallion, four years old and over, with colt	St. Clair.....	.....$50
Alexander Ely...	San Francisco.	Best stallion, three years old	Gen. Dana.....	.....$40
S. B. Whipple...	San Mateo.....	Best gelding, four years old and over.....	Westfield.....	.....$40
		Mares.		
S. B. Whipple...	San Mateo.....	Best mare, four years old and over.....	Lady Blanchard	.....$40
Joshua Sessions.	Brooklyn	Best mare, three years old	Oakland Maid...	.....$30
				Special Prem.
Walter Smith....	Oakland.....	Roadster stallion.....	Terminus.....	..Silv. cup—$15
Edw. Barnes.....	San Francisco.	Roadster gelding.....	Ben. Hancock...	..Silv. cup—$15
S. B. Whipple...	San Mateo.....	Roadster stallion.....	California Dexter	..Silv. cup—$15
Rufus Denmark.	Centerville.....	Roadster stallion.....	Young Rattler...	..Silv. cup—$15
E. M. Skaggs....	Sacramento....	Roadster stallion.....	Rattler	..Silv. cup—$15
Peter Donahue...	San Francisco.	Roadster gelding.....	Pat. Malloy.....	..Silv. cup—$15

CLASS VI.—CARRIAGE HORSES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
W.B. Holcombe	San Francisco.	Best matched span, owned by one person.....	Bucephalus and Prince	Sil.goblet—$40

CLASS VII.—ROADSTER TEAMS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
—— Tobin.....	San Francisco.	Best double team roadsters owned and used by one person.....	Paddy McGee & Brown Mac....	Sil.goblet—$40

CLASS VIII.—SADDLE HORSES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
A. Musick.....	Sacramento....	Best saddle horse.....	Tom Tickle.....	.....Fine bridle.

CLASS IX.—COLTS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
A. A. Bennett...	Sacramento....	Best yearling horse colt..	White Nose.....	.....$30
R. M. Briggs.....	Buckeye.....	Best sucking horse colt...	Brick Pomeroy..	.....$20
C. H. Shear.....	Sacramento....	Best yearling mare colt...	Peggy McGee....	.....$20
John Neal.....	Sacramento....	Best sucking mare colt...	Flora.....	.....$15
S. B. Whipple...	San Mateo.....	Best exhibit of not less than six colts, of any age or sex, owned by one person.....	.....	.....$50

CLASS X.—SWEEPSTAKES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Theo. Winters..	Solano	Best stallion of any age..	Norfolk	Sil.pitch'r-$150
S. B. Whipple...	San Mateo.....	Best mare of any age.....	Harvest Queen...	Sil.pitch'r-$100

CLASS XI.—JACKS AND MULES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
T. E. Price.....	Hicksville	Best jack.....	Mammoth.....	.....$50
Thos. Edwards..	Sacramento....	Best jennet.....	Lady Franklin..	.....$40
Thos. Edwards..	Sacramento....	Best mule, one year old..	Fan.....	.....$15

CLASS I.—THOROUGHBRED CATTLE.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Durham Bulls.		
C. Younger	San José	Best bull, four years old and over	Glencoe	$75
R. B. Cannon	Solano Co	Best bull, three years old and over	Perfection	$40
G. N. Swezy	Marysville	Best bull, two years old and over	First Duke of Yuba	$30
Werner&Hamill	Davisville	Best bull, one year old and over	Bolingbroke	$25
C. Younger	San José	Best bull calf	Richmond	$15
		Durham Cows.		
C. Younger	San José	Best cow, four years old and over	Maggie	$50
C. Younger	San José	Best cow, three years old and over	Sprightly	$40
R. M. Sparks	Lincoln	Best cow, two years old and over	Maggie Second	$30
C. Younger	San José	Best cow, one year old and over	Mary Stuart	$25
R. B. Cannon	Solano Co	Best heifer calf	Ella Tenth	$15
		Devon Bulls.		
J. R. Rose	Lakeville	Best bull, four years old and over	Bloomfield	$75
J. R. Rose	Lakeville	Best bull, three years old and over	Frank Quarterly	$40
J. R. Rose	Lakeville	Best bull, one year old and over	Red Jacket	$25
J. R. Rose	Lakeville	Best bull calf	Rover	$15
		Devon Cows.		
J. R. Rose	Lakeville	Best cow, four years old and over	Maud Second	$50
J. R. Rose	Lakeville	Best cow, three years old and over	Mary	$40
J. R. Rose	Lakeville	Best cow, one year old and over	Nelly	$20
J. R. Rose	Lakeville	Best heifer calf	Jenny	$15
		Ayrshire Cattle.		
M. Bryte	Sacramento	Best cow, one year old and over	Flora McIvor	$20

CLASS II.—GRADED CATTLE.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Bulls.		
E. Comstock.....	Yolo County..	Best bull, three years old and over.....	Billy	.....$30
Werner & Hamill	Davisville	Best bull, one year old and over.....	Billy	.....$15
Robt. Ashburner	San Mateo.....	Best bull calf.....	Major	.....$10
		Cows.		
Clark & Cox	Sacramento....	Best cow, four years old and over.....	Emma	.....$30
E. Comstock.....	Yolo County...	Best cow, three years old and over.....	White Lily.....	.....$20
R. Williamson...	Sacramento....	Best cow, two years old and over.....	Lily	.....$15
R. B. Cannon....	Solano County	Best cow, one year old and over.....	Molly	.....$10
Coleman Younger.....	San Jose.....	Best herd of any one breed, not less than ten, owned by any one person	.....	.....$100
				Special.
Clark & Cox.....	Sacramento....	Graded heifer calf.....	Laura	Silver cup–$15
—— Harris.....	.....	Fat steer and cow.....	.....	Sil. goblet–$20

CLASS III.—CATTLE SWEEPSTAKES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
G. N. Swezy.....	Marysville	Best bull of any age or stock.....	First Duke of Yuba	Sil.pitch'r–$100
G. N. Swezy.....	Marysville	Best cow of any age or stock.....	Beauty.....	Sil. pitcher–$75

STOCK SHEEP AND MUTTON.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Landrum & Rogers	Watsonville...	Best ram two years old and over.....	William Wallace	.....$20
Peter Saxe.....	Sacramento....	Best ram under two years	No Name.....	.....$15
Peter Saxe.....	Sacramento....	Best three ewes two years old and over.....	.....	.....$15
Peter Saxe.....	Sacramento....	Best three ewes under two years.....	.....	.....$10

SPANISH MERINO.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Amos Roberts...	Solano county	Best ram two years old and over	Red Leg	$30
Smith & Overhiser	Grayson	Best ram under two years		$30
Thos. M'Connell	Elk Grove	Best three ram lambs		$20
Amos Roberts...	Solano County	Best three ewes two years old and over		$20
Smith & Overhiser	Grayson	Best three ewes under two years		$20

FRENCH MERINOS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Rams.		
William Blaco...	Centerville	Best ram, two years old and over		$30
William Blaco...	Centerville	Best ram under two years		$20
William Blaco...	Centerville	Best three ram lambs		$20
		Ewes.		
William Blaco...	Centerville	Best three ewes, two years old and over		$20
William Blaco...	Centerville	Best three ewes, under two years		$20
William Blaco...	Centerville	Best five ewe lambs		$20

SILESIAN SHEEP.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Rams.		
Robert Beck	Sacramento	Best ram, two years old and over		$30
		Ewes.		
Robert Beck	Sacramento	Best three ewes, two years old and over		$20

COTSWOLD SHEEP.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Rams.		
Peter Saxe	Sacramento	Best ram, two years old and over		$30
Landrum & Rogers	Watsonville	Best ram, under two years	California Chief.	$20
Landrum & Rogers	Watsonville	Best three ram lambs		$20
		Ewes.		
Landrum & Rogers	Watsonville	Best three ewes, two years old and over		$20
Peter Saxe	Sacramento	Best three ewes, under two years		$20
Landrum & Rogers	Watsonville	Best five ewe lambs		$20

LEICESTERSHIRE SHEEP.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Rams.		
William Blaco	Centerville	Best ram, two years old and over		$30
William Blaco	Centerville	Best ram, under two years		$20
William Blaco	Centerville	Best three ram lambs		$20
		Ewes.		
William Blaco	Centerville	Best three ewes, two years and over		$20
William Blaco	Centerville	Best three ewes, under two years		$20
William Blaco	Centerville	Best five ewe lambs		$20

CROSS BETWEEN ANY TWO THOROUGHBRED.

Exhibitor.	Residence.	Animal.	Name.	Premium.
		Rams.		
Smith & Overhiser	Grayson	Best ram, under two years old (cross between Spanish and French merino)		$20

GRADE OR CROSS WITH SPANISH MERINO.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Mrs. F. Graham.	Elk Grove.....	Best ram, two years old and over.....	.....	.....$20
Mrs. F. Graham.	Elk Grove.....	Best ram under two years.....	.....	.....$15
Mrs. F. Graham.	Elk Grove.....	Best three ram lambs.....	.....	.....$20
Mrs. F. Graham.	Elk Grove.....	Best three ewes, two years old and over.....	.....	.....$15
Mrs. F. Graham.	Elk Grove.....	Best three ewes under two years.....	.....	.....$15
Mrs. F. Graham.	Elk Grove.....	Best five ewe lambs.....	.....	.....$15

CROSS WITH COTSWOLD.

Exhibitor.	Residence.	Animal.	Name.	Premium.
H. A. Rawson...	Tehama	Best ram, two years old and over.....	.....	.....$20
H. A. Rawson...	Tehama	Five bucks.....	.....	Premium recommended.

SWEEPSTAKES.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Amos Roberts...	Solano County	Best buck of any age or breed.....	Red Leg.....	.....$30
Amos Roberts...	Solano County	Best ewe of any age or breed.....	.....	.....$25
Amos Roberts...	Solano County	Best pen of not less than five of any age or breed.	.....	.....$30

ANGORA GOATS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Gray & Gilmore.	El Dorado County.....	Best thoroughbred buck..	Sultan II.....	.....$30
Landrum & Rogers.....	Watsonville...	Best thoroughbred she goat.....	.....	.....$20
Gray & Gilmore.	El Dorado County.....	Best thoroughbred three kids.....	.....	.....$20

GRADED GOATS.

Exhibitor.	Residence.	Animal.	Name.	Premium.
Gilmore	El Dorado County	Best lot of three		$15
H. A. Rawson	Tehama	Best two years old South-down ram		Special—$30
H. A. Rawson	Tehama	Best one year old South-down ram		Special—$20
H. A. Rawson	Tehama	Best pen of five South-down rams		Special--Silver goblet—$20

SWINE.

Exhibitor.	Residence.	Animal.	Name.	Premium.
M. Sprague	Sacramento	Best boar, two years old and over	Dick	$30
R. S. Thompson.	Napa	Best boar under two years	General Warren	$20
R. S. Thompson.	Napa	Best boar, six months old and under one year		$10
Peter Burns	Sacramento	Best breeding sow, two years old and over	Mary	$25
R. S. Thompson.	Napa	Best breeding sow, one year old	Victoria Second.	$15
R. S. Thompson.	Napa	Best sow, six months old and under one year		$10
R. S. Thompson.	Napa	Best lot of not less than six pigs, not less than five nor more than ten months old		$20
Peter Saxe	Sacramento	Berkshire pigs, imported.		Special--Silver goblet—$20

POULTRY.

Exhibitor.	Residence.	Animal.	Premium.
Peter Burns	Sacramento	Best white or gray Dorkings	$5
Peter Burns	Sacramento	Best Jersey blues	$5
Charles Green		Best lot of English game	$5
T. E. Finley, agent California Stock and Poultry Association		Best light Brahmas	$5
T. E. Finley		Best two lots of dark Brahmas	$5
T. E. Finley		Best two lots of buff Cochins	$5
T. E. Finley		Best two lots of silver-spangled Hamburgs	$5
T. E. Finley		Best lot of Silver Polish	$5
T. E. Finley		Best lot of Golden Polish	$5
T. E. Finley		Best lot of Japan bantams	$5
T. E. Finley		Best lot of game bantams	$5

POULTRY—Continued.

Exhibitor.	Residence.	Article.	Premium.
T. E. Finley		Best lot of golden lace Sea-bright bantams	
T. E. Finley		Best lot of Houdans	
T. E. Finley		Best lot of partridge Cochins	
T. E. Finley		Best lot of Rouen ducks	$5
R. Towne		Best lot of silver-penciled and Dominiques	$5
C. W. Upson		Best lot of Crevecœurs	$5
Robert Cowne		Best lot of turkeys	$5
Peter Burns	Sacramento	Best lot of geese	$5
		The committee recommend a premium of $5 to the exhibitor of four pair of Madagascar rabbits.	

SECOND DEPARTMENT.

MACHINERY, IMPLEMENTS, ETC.

Exhibitor.	Residence.	Article.	Premium.
The Babcock Northwestern Fire Extinguishing Co., S. C. McDowell, ag't.	San Francisco	Fire engine and extinguishers	Framed diploma.
Pacific Pneumatic Gas Co., F. P. Howard, agent	San Francisco	Pneumatic gas machine	Diploma.
Thomas Day, F. P. Howard, agent	San Francisco	New style opal globes and chandeliers, lighted by pneumatic gas	Favorable mention.
L. Marks and Molineaux	San Francisco	Pacific gas machine	Diploma.
Jones & Hewlett	Stockton	Portable thrashing machine, Wood, Taber & Morse, Eastern manufacture	Diploma.
C. B. Brown	Placerville	Self-generating gasburners	Diploma.
Nicolas Lumsden	Sacramento	Machine for manufacture of screwed boots and shoes	Diploma.
J. M. Frey, M. D.	Sacramento	Model of Frey's improvement on Evans' under-current sluices for saving gold and quicksilver, for quartz mills and surface mines	Diploma.
Keller & Willard	Franklin	Vibrator thrashing machine and mounted horsepower	Framed diploma.
Atwood & Bodwell, M. S. Bowdish, ag't	San Francisco	"Little Giant" sweep horse-power	Diploma.

MACHINERY, IMPLEMENTS, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
Matteson & Williamson	Stockton	Large chisel cultivator, self-sharpening	Diploma.
Matteson & Williamson	Stockton	Horse hay or grain fork	$5.
W. H. Pope	Stockton	Graham's broadcast combined seeder and cultivator	Diploma.
Baker & Hamilton	San Fran. and Sacramento	Combined "Buckeye" reaper and mower, Nos. 1 and 2. Eastern manufacture	Diploma.
Dunn & Campbell	San Francisco	Iron harrow	$5.
B. F. Cook	Napa City	Steam harvester	Favorable mention.
E. F. Aiken	Sacramento	Horse corn cultivator	$5.
M. S. Bowdish	San Francisco	Challenge feedmill, California manufacture	Diploma and $10.
Dewey & Co.	San Francisco	Phillip's patent spiral corn-husker, husks corn from stalks, or after it is picked.	Diploma.
Nash, Miller & Co.	Sacramento	Grain separator	Diploma and $5.
F. M. Ranous	Yreka	Patent gate latch, California invention; and regulator, California invention	Diploma recommended
Baker & Hamilton	San Fran. and Sacramento	Buckeye cider mill	Diploma.
J. S. Harbison	Sacramento	Beehive	Diploma.
J. S. Harbison	Sacramento	Italian bees	Diploma.
N. S. W. Parkhurst	San Francisco	Display of scales	Diploma.
J. G. Anderson	Gilroy	Patent cheese vat	Diploma and $10
J. G. Anderson	Gilroy	Curd cutters	Diploma.
J. G. Anderson	Gilroy	Agitator	Diploma.
J. G. Anderson	Gilroy	Lactometer	Diploma.
Iddo Green	Richmond	Butter worker	Diploma.
A. S. Hallidie	San Francisco	Endless wire ropeway	Silver medal.
A. S. Hallidie	San Francisco	Patent grip pulley	Framed diploma.
Thomas B. Park	Downieville	Double action horizontal rotary churn (California invention)	$10
William Cantelow	Vacaville	Churns	Diploma.
Weichort & Co.	San Francisco	Reaping and mowing knives	$5
David N. Phelps	San Leandro	Air pump for preserving fruit, milk, etc	Diploma.
Thomas Orchard	Sacramento	Well auger	Silver medal.
Thomas Orchard	Sacramento	Post auger	Diploma.
G. A. Lloyd	San Francisco	Gopher trap	Diploma.
Williams & Humphrey	Stockton	Barley forks	Diploma.
Laufkotter Brothers	Sacramento	Stock's patent pump valves	Diploma.
Otis H. Weed & Co.	Sacramento	Patent carpet sweeper	Diploma.
Dr. J. L. Bartlett	Stockton	Portable gas machine	Diploma.
I. L. Merrill	Sacramento	Bright Union safety lamp	Silver medal.
Williams & Humphrey	Stockton	Grain draper and header apron	Diploma.
Thomas Wheaton	San Francisco	Buckeye hay and straw cutter	Diploma.
Hawley & Co.	San Francisco	Clipper mower	Diploma.
M. Barthel	Pacheco	Best farm gate	$15
M. L. Reynolds	Sacramento	Imperial wash boiler and machine combined	Diploma and $5
H. H. Hewlett	Stockton	Williamson's road steamer (Thompson's patent)	Diploma and $50

PLOWS.

Exhibitor.	Residence.	Article.	Premium.
Hill & Knaugh	Marysville	Two gang plows	$40
Hill & Knaugh	Marysville	Stubble plow	$10
Matteson & Williamson	Stockton	Plow for general purposes	$10
M. P. Rose	Napa	One-horse plow	$5
Myres & Gummow	Marysville	Subsoil gang plow	$10
Matteson & Williamson	Stockton	Sulky two gang plow	Special—$30
G. W. Haines	Maine Prairie	Two gang plow	Special—$20
W. B. Ready	Sacramento	Two gang plow	Special—$20

VEHICLES.

Exhibitor.	Residence.	Article.	Premium.
Studebaker Brothers Manufacturing Co. (Ames & Woolverton, agents)	Sacramento	Two farm wagons, one thimble skein, and one iron axle	Diploma.
Ross & Smith	Reno	Two sulkies (Ross' patent wheel)	Diploma.
Waterhouse & Lester	Sacramento	Assortment of wagon and carriage material and trimmings	Diploma.
W. M. Betts & Co.	San Francisco	Three sets of side carriage springs, one set milk wagon springs, one set of Clarence springs, five sets of buggy springs, one set of sulky springs, one set of express wagon springs	Framed Diploma.
S. H. Davis	Sacramento	One Little Giant carriage jack	$5
Daniel Mason	Sacramento	One single seat open buggy	Diploma.
Harry Bernard	Sacramento	Five top buggies (two with patent wheels)	
Harry Bernard	Sacramento	One trotting sulky (weight 64¾ pounds)	Silver medal.
Harry Bernard	Sacramento	One spring market wagon	$15
Harry Bernard	Sacramento	One street goods wagon	$5
Harry Bernard	Sacramento	Twenty sets of carriage and buggy wheels and hubs	$10
P. Craig and son	San Francisco	One hearse	Diploma.
Excelsior Power Co. of New York (E. Soule, agent)	Sacramento	One anti-friction axle with metallic balls applied	Diploma recommended
E. Soule	Sacramento	One light running gear with anti-friction bearing, locust hubs, set wheels (locust hubs and bent rims), locust felloes and planks—wood, California growth, and all California make	Diploma.
E. Soule	Sacramento	Assortment of thimble skeins	$15
Wm. B. Ready	Sacramento	One trotting buggy	Diploma.
Wm. B. Ready	Sacramento	Farm wagon	$15
Pollard & Carvill	San Francisco	One two-horse family carriage	Diploma and $30

VEHICLES—Continued.

Exhibitor.	Residence.	Article.	Premium.
Pollard & Carvill.....	San Francisco..	One one-horse family carriage	.....Diploma and $25
Pollard & Carvill.....	San Francisco..	Two top buggies..... Committee recommend the gold medal to Pollard & Carvill.	.....Diploma and $20
Kimball Manufacturing Co.....	San Francisco..	Two two-seated open carriages	.....Silver medal.
Kimball Manufacturing Co.....	San Francisco..	Five open buggies.....	.....Silver medal.
Kimball Manufacturing Co.....	San Francisco..	One case plated ware, consisting of specimens in plating of carriage tips, etc.....	.....Diploma.
—— McKibben.....	San Francisco..	Two patent iron wheelbarrows	.....Diploma.
Henderson & Clark..	Stockton	One three-quarter trotting wagon	.....Diploma and $15
E. Soule.....	Sacramento.....	Farm wagon.....	...$15 and silver medal.
Weister & Faighn...	Sacramento.....	Top buggy.....	.....Diploma.

THIRD DEPARTMENT.

SILK.

Exhibitor.	Residence.	Article.	Premium.
Edward Muller.....	Nevada City...	Best exhibition of the silk business, from the mulberry tree to cocoon, including feeding of the worms, their eggs, etc.....	.....$50

FABRICS MADE FROM CALIFORNIA SILK.

Exhibitor.	Residence.	Article.	Premium.
Edward Muller.....	Nevada City...	Best pound of reeled silk, made in family.....	.....$10
Edward Muller.....	Nevada City...	Best sample of cocoons.....	.....Honorable mention.
Joseph Newman.....	San José..... ...	Best specimen silk manufacture, not less than five yards	.....$20
Joseph Newman.....	San José.....	Best pound of sewing silk made in family.....	.....$10
Joseph Newman.....	San José.....	Best specimen of raw silk goods.....	.....$10
Joseph Newman.....	San José.....	Best pair silk stockings.....	.....$10

FABRICS MADE FROM CALIFORNIA SILK—Continued.

Exhibitor.	Residence.	Article.	Premium.
Joseph Newman	San José	Best pair silk gloves	$10
Joseph Newman	San José	Best silk shawls	$20
Joseph Newman	San José	Best silk cravat	$10
Joseph Newman	San José	Best piece of pocket handkerchiefs	$10
Joseph Newman	San José		Also such honorable award as the society may see fit.
Mrs. S. A. Sellers	Antioch	For an interesting exhibit of the silk business	Silver medal.
California Silk Manufacturing Co.	San Francisco	For a valuable exhibition of raw and sewing silk	Special—Silver medal and diploma.
Tobin, Davisson & Co.	San Francisco	American manufactured silk goods — manufactured by Cheney Brothers	Special—Silver medal and diploma.
M. Kraker	Sacramento	Fine display of gentlemen's and ladies' underclothes and furnishing goods	Special—Silver medal.

NEEDLE, WAX AND SHELL WORK, CLOTHING, HATS, CAPS.

Exhibitor.	Residence.	Article.	Premium.
Oakland Mills	Oakland	Exhibition of jute goods	Silver medal.
S. Wilzinski & Co.	Sacramento	Best exhibit of gent's and boy's clothing	Diploma.
Madam Anna Getz	San Francisco	Wax work flowers	$5
Madam Anna Getz	San Francisco	Group of wax work flowers	$5
Madam Anna Getz	San Francisco	Wax fruits	$5
Madam Anna Getz	San Francisco	Funeral wreaths	Silver medal.
Mrs. A. O. Cook	San Francisco	Wax flowers, wax shells, and statuary	Silver medal.
Miss Belle Maguire	Sacramento	Cross and pond lily, wax	Special mention.
Mrs. C. Cook	San Francisco	Hair jewelry, fine device of hair work, sea moss	Silver cup—$15
Mrs. Carrie E. James	Sacramento	Sea moss	Napkin ring.
Mrs. E. M. Skaggs	Sacramento	Hair wreath	Silver medal.
Mrs. S. Sims	Sacramento	Hair wreath	Napkin ring.
Mrs. R. W. Murphy	Sacramento	Best display of millinery	$20
Mrs. S. Sims	Sacramento	Best crochet shawl	$5
Mrs. R. W. Murphy	Sacramento	Best velvet bonnet	$5
Mrs. R. W. Murphy	Sacramento	Best variety artificial flowers	$5
Mrs. W. C. Barrett	Sacramento	Best silk bonnet	$5
Mrs. W. C. Barrett	Sacramento	Best group artificial flowers	$10
Mrs. C. Cook	San Francisco	Best embroidered rug	Napkin ring.
Mrs. W. F. Hicks	Sacramento	Best embroidered chair seat	$5
Mrs. W. F. Hicks	Sacramento	Best embroidered ottoman	$5
Mrs. W. F. Hicks	Sacramento	Second best silk embroidery	Diploma.
Mrs. Evaline Morris	San Francisco	Best gentlemen's shirts	$5
Woman's Coöperative Union	San Francisco	Second best gentlemen's shirts	Special.
Woman's Coöperative Union	San Francisco	Fine sewing	Special.

NEEDLE WORK, SHELL WORK, ETC.—Continued.

Exhibitor.	Residence.	Article.	Premium.
Woman's Coöperative Union	San Francisco	Best knit stockings	$3
Woman's Coöperative Union	San Francisco	Second best crochet work	Special.
Woman's Coöperative Union	San Francisco	Best silk embroidery	$5
Woman's Coöperative Union	San Francisco	Best exhibit and greatest number of articles	Diploma and $10
Mrs. A. J. Aiken	Sacramento	Best tatted collar	$3
Miss J. M. Pierce	Sacramento	Second best tatting	Special.
Miss J. M. Pierce	Sacramento	Second best bead work	Special—$3
Miss Sallie Russell	Sacramento	Best chenile work	Special—$5
Miss Anna Gherber	Sacramento	Lamp stand	$3
Miss Lizzie Allen	Sacramento	Sofa pillow	
Miss J. M. Pierce	Sacramento	Best flower work	$5
Mrs. S. F. Chamberlain	Sacramento	Best cone work	$5
Mrs. M. Lamerkin	Sacramento	Best skeleton leaves	Special—diploma.
Miss Mary E. Hanlon	Sacramento	Best shell work	$5
Miss Carrie James	Sacramento	Second best shell work	Special.
Miss Mary Packard	Santa Barbara	Best embroidered picture	$10
Miss Mary Gœthe	Sacramento	Second best embroidered picture	Special.
Mrs. L. A. Cole	San Francisco	Best afghan	Diploma.
Mrs. R. L. Jones	Sacramento	Model for dress fitting	Special—diploma.
Mrs. J. H. Carrington	Florin	Best patch work quilt (log cabin)	$5
Mrs. E. W. Anderson	Sacramento	Best silk quilt	$5
Miss Jennie Bradley	Sacramento	Best white quilt	$5
Mrs. S. M. Hoaver	Elk Grove	Best coverlet	$5
Mrs. J. P. Odbert	Sacramento	Best knit bedspread	$5
Mrs. A. S. Greenlaw	Sacramento	Best hearth rug	$5
Mrs. M. A. Joy	Sacramento	Second best hearth rug	Special.
Mrs. Alexander Mackay	Sacramento	Best rag carpet	$10
Mrs. Charles N. Rhodes	Sacramento	Best ornamental needle work	$5
M. Freud	San Francisco	Shoulder brace corset and hoops	Diploma.
Mrs. Asbury & Crase	San Francisco	Magic curler	Diploma.
Mrs. S. M. Hoaver	Elk Grove	Best knit stockings	$3
Mrs. H. T. Lowery	Sacramento	Walking dress	Diploma.
Miss J. M. Pierce	Sacramento	Crochet work	Napkin ring.
Mrs. M. Lamkin	Sacramento	Skeleton leaves	Diploma.
Miss Sallie Coons	Elk Grove	Wreath of feather flowers	Napkin ring.
Mrs. R. Jones	Sacramento	Model of dress fitting	Diploma.
Mrs. J. H. Roberts	Sacramento	Tatting tidy and tatting collar	Special mention.
Mrs. Barney Clark	Sacramento	Hair wreath and seed wreath	Napkin ring.
Mrs. T. E. Coleman	Knight's Landing	Worsted wreath	Napkin ring.

CHINESE AND JAPANESE GOODS.

In consideration of the great prospective good that must result to our State and the whole Pacific Coast from the opening of the Japan and China trade, this committee would recommend, as a testimonial of our recognition of this good, that a silver goblet or medal—with a token of welcome engraven thereon—be awarded to each of said exhibitions.

Exhibitor.	Residence.	Article.	Premium.
Chauby, Masauki & Co.	San Francisco..	Exhibition of Japanese goods	.....Silver goblet—$25
D. D. J. Magowan...	Shanghai.....	Exhibition of Chinese goods.	.....Silver goblet—$25

SADDLERS' AND SHOEMAKERS' WARE AND MISCELLANEOUS ARTICLES.

Exhibitor.	Residence.	Article.	Premium.
J. W. Todd.....	Sacramento.....	Best pair dress boots.....	.....$5
J. W. Todd.....	Sacramento.....	Best pair heavy boots.....	.....Framed diploma.
F. X. Kast.....	San Francisco..	Best pair gents' dress shoes...	.....$5
F. X. Kast.....	San Francisco..	Best pair ladies' gaiters.....	.....$3
F. X. Kast.....	San Francisco..	Best pair ladies' slippers.....	.....$3
F. X. Kast.....	San Francisco..	Best display ladies' shoes.....	.....Diploma.
James Parsons.....	Sacramento.....	Best pair ladies' bootees.....	.....$3
Liddle & Kaeding...	San Francisco..	California made rifles. The committee consider the display the best coming under their observation, and recommend.....	.....Silver medal.
E. S. Scranton.....	San Francisco..	Rustic window shade.....	.....Diploma.
J. H. Mooney and G. A. Lord.....	San Francisco..	Improved gopher and squirrel trap	.....Diploma.
J. H. Mooney.....	San Francisco..	Improved tuck mark for sewing machines	.....Diploma.
R. K. Wick.....	Sacramento.....	Display of undertakers' goods, casket, etc.....	.....Diploma.
S. K. Dodge.....	Sacramento.....	Display of buckskin gloves...	.....Diploma.
D. Samuels.....	San Francisco..	Display of gloves and mittens	.....$3
G. Reichert.....	Sacramento.....	Best display of saddletrees....	.....$3
D. H. Quinn.....	Sacramento.....	Best silk hat.....	.....$5
J. C. Meussdorffer...	Sacramento.....	Best soft hat.....	.....$5
Patterson & Russel..	San Francisco..	Best display of shoemakers' lasts.....	.....$5
S. H. Sheplar & Co..	San Francisco..	Holt's patent rubber type marking wheel or lightning printer.....	.....Silver medal.
S. H. Sheplar & Co..	San Francisco..	Rubber hand-stamps and New York dater.....	.....Diploma.
John Ashton.....	Tomales, Marin County...	Dutton's improved harness....	.....Diploma.
P. Caduc.....	San Francisco..	Best wood pavement on exhibition	.....Diploma.
Henry Campbell.....	San Francisco..	Patent treadle for sewing machine	.....Diploma.
Henry Campbell.....	San Francisco..	Lamp-bracket for sewing machine.....	.....Diploma.
E. H. Parker.....	Sacramento.....	Best display of saddles.....	.....$10
E. H. Parker.....	Sacramento.....	Best farm harness.....	.....$10
James Hartley.....	Sacramento.....	Fleece of fine wool.....	.....Honorable mention.
A. Brooks.....	Sacramento.....	Shoe lasts.....	.....Diploma.

FOURTH DEPARTMENT.

CABINET WARE.

Exhibitor.	Residence.	Article.	Premium.
George E. Phelan....	San Francisco..	Best California made billiard table, California laurel and black walnut, with Eureka wire cushions.....	..... Second—Diploma.
C. B. Pennington....	Sacramento.....	Diamond mahogany hat rack.	....Honorable mention.
John Breuner.....	Sacramento.....	Best dressing bureau.....	.....$10
John Breuner.....	Sacramento.....	Best sofa lounge.....	.....$5
John Breuner.....	Sacramento.....	Best extension table.....	..... $5
John Breuner.....	Sacramento.....	Best office chair.....	.....$5
John Breuner.....	Sacramento.....	Best set parlor chairs.....	.....$10
John Breuner.....	Sacramento.....	Best book case.....	.....$5
John Breuner.....	Sacramento.....	Best set parlor furniture.....	.....$20
John Breuner.....	Sacramento.....	Best sick chair or couch.....	.....$5
John Breuner..... ...	Sacramento.....	Best display of furniture.....	.....$20
Jacob Strahle & Co..	San Francisco..	Best billiard table, wire cushions, California laurel and birdseye redwood, California invention.....	.....Silver medal.
Jacob Strahle & Co..	San Francisco..	Best set bedroom furniture, California laurel and birdseye redwood.....	.....$20
Jacob Strahle & Co..	San Francisco..	Best center table, made of twenty different California woods	.....$5
Jacob Strahle & Co..	San Francisco..	Best ladies' work-boxes.....	....Honorable mention.
Jacob Strahle & Co..	San Francisco..	Mosaic inlaid floor.....	.....Diploma.
A. S. Hallidie	San Francisco..	Wood carpet.....	.....Diploma.
N. P. Langland.....	Sacramento.....	Black walnut and laurel newels, rails, and bannisters for stairway of State Capitol.....	....Honorable mention.
Cooley & Green.....	Sacramento.....	Crandall's patent spring bed..	.....Diploma.
W. J. T. Palmer & Co.....	San Francisco..	Principal school teacher's desk.....	.....Diploma.

WOODEN WARE.

Exhibitor.	Residence.	Article.	Premium.
Nichols, Falvey & Co.	Sacramento.....	Assortment of wooden ware, Cal. cedar and pine.....	..... $10
Nichols, Falvey & Co.	Sacramento.....	Best display of wooden ware..	..... $50
A. J. Biglow..... ..	Sherman Isl'nd	One bundle basket willow.....	....Honorable mention.
C. Shafer.....	Sacramento.....	Best two oval wine casks.....	..... $10
W. C. Palmer.....	San Francisco..	Best writing desk.....	..... $5
W. F. Palmer.....	San Francisco..	Best school desks.....	..... $5
Pacific Wood Preserving Company.	San Francisco..	Display of preserved woods for various purposes.....	.....Silver medal.

PHILOSOPHICAL INSTRUMENTS, ETC.

Exhibitor.	Residence.	Article.	Premium.
J. F. Uhlhorn	Sacramento	For extention sidesticks or printer's furniture	Diploma.
Edward Dillon		For best marine chronometers	Diploma.

GLASS, CROCKERY, STONEWARE, ETC.

Exhibitor.	Residence.	Article.	Premium.
Mocker & Quale	San Francisco	Best plaster paris	Honorable mention.
Adams, McNeill & Co	Sacramento	Best powder	Diploma.
Withingham & Bagley	Sacramento	Best pyramid washing soap and powder	Diploma.
N. Siebert	San Francisco	Best lubricators for oiling steam cylinders	Diploma.
Miss. Candle Works	San Francisco	Best assortment of sperm, chemical wax, solar sperm, coach, hotel and solar candles	Silver medal and dip.
Yount & Fletcher	Sacramento	Best paint, manufactured by Cal. Chemical Paint Co	Diploma.
Colby & Brock	Mormon Isl'nd	Best sample Cal. raised opium and poppy seed	Special—Diploma.
Thomas O'Neil	San Francisco	Best sample cut glass, door plates, church windows and sample stained glass	Diploma.
W. Clark & Co	Sacramento	Best fire brick	$3
W. Clark & Co	Sacramento	Best pottery of various kinds	Silver medal.
W. Clark & Co	Sacramento	Best stoneware	Diploma.
W. Clark & Co	Sacramento	Best drain and flooring tile and sewer pipe	Special—$5

CHEMICALS.

Exhibitor.	Residence.	Article.	Premium.
B. R. Sweetland	Sacramento	Best ivory black	$5
B. R. Sweetland	Sacramento	Best Prussian blue	$5
B. R. Sweetland	Sacramento	Best copal varnish	$5
B. R. Sweetland	Sacramento	Best glue	$5
B. R. Sweetland	Sacramento	Best prussiate of potash	$5
B. R. Sweetland	Sacramento	Best white lead	$5
B. R. Sweetland	Sacramento	Best lard oil	$5
B. R. Sweetland	Sacramento	Best castor oil	$10
B. R. Sweetland	Sacramento	Best linseed oil	$10
J. F. Fugazi	Sacramento	Best Oriental oil hair dye	Silver medal.
Van Winkle & Davenport	Sacramento	One box borax, from Wadsworth, Nevada	Honorable mention.

MINERALS.

Exhibitor.	Residence.	Article.	Premium.
Henry G. Hanks	San Francisco..	Collections of minerals	Silver medal.
Henry G. Hanks	San Francisco..	Collection of fossils	Diploma.
Phœnix Quicksilver Mine	Napa	Specimens quicksilver ore	Honorable mention.
E. F. Howett	Grand Island, Colusa Co....	Best lot of iron ore	Honorable mention.

WORKED METALS, STOVES, ETC.

Exhibitor.	Residence.	Article.	Premium.
J. E. Parker	Sacramento	Best carriage harness	$10
Elworthy & Duperow	Sacramento	Best sash holder and lock	Diploma.
C. Hunter	Clyde, Ohio	Best pruning knives	Diploma.
W. H. Earl	Sacramento	Best tin milk cans	Diploma.
S. H. Davis	Sacramento	Best display of mechanics' tools	$10
Thomas H. Selby & Co	San Francisco..	Five kegs shot	Diploma.
Thomas H. Selby & Co	San Francisco..	Best display of plumbers' goods and wares	Diploma and $10
John Burns	Stockton	Best display of horse shoes	Diploma and $5
A. Brooks	San Francisco	Champion roller skates	Diploma.
G. A. Lloyd	San Francisco..	Double action spring door hinge	Diploma.
A. Hunter	Napa City	Variety of mill augurs	Diploma.
John Ashton	San Francisco..	Best harness	Diploma.
Yale Lock Manufacturing Co	San Francisco..	Best display of locks	$5
A. L. Fish		Knowles' patent steam pump.	Silver medal and diploma.
Elworthy & Duperow	Sacramento	Sash holder (California invention)	Diploma.
Goddard & Co	San Francisco..	Cast iron pipes for gas or water, cast by the new vertical process for the Metropolitan Gas Company	Diploma and special.
F. P. Howard, agent	San Francisco..	Gates for gas, water or steam (Chapman patent)	Diploma.
R. Savage	San Francisco..	Empire range (California manufacture—wood)	Diploma and $5
Gillig, Mott & Co	Sacramento	French range (Eureka, California manufacture)	$10
Gillig, Mott & Co	Sacramento	Prindal's farmers' cauldron and steamer	$5
R. C. Terry & Co	Sacramento	Portable hot air furnace	$5
R. C. Terry & Co	Sacramento	Best display of kitchen and tinware	Diploma and $10
J. G. Covey	St. John, N. B.	Cooking apparatus (Eastern manufacture)	Diploma.
Asphaltum Pipe Co..	San Francisco..	Asphaltum pipe	Diploma.
M. Barthel	Pacheco	Farm gate	Diploma and $15

MUSICAL INSTRUMENTS.

Exhibitor.	Residence.	Article.	Premium.
L. K. Hammer	Sacramento	Best grand piano (manufactured by Chickering & Co)	$20
L. K. Hammer	Sacramento	Best square piano (manufactured by Chickering & Co)	$20
L. K. Hammer	Sacramento	Best parlor piano (manufactured by Chickering & Co)	$10
John F. Cooper	Sacramento	For Mathushek "Colibri" piano	Silver medal.
John F. Cooper	Sacramento	For fine Derrick & Felgemaker portable pipe organ	Diploma.
John F. Cooper	Sacramento	Reed organ	Diploma.
John F. Cooper	Sacramento	Silver flute	Diploma.
William G. Badger	San Francisco.	Hallet & Davis' pianos	Special mention.
R. C. Marsh	Sacramento	Hews' piano	Special mention.

FIFTH DEPARTMENT.

CHEESE.

Exhibitor.	Residence.	Article.	Premium.
J. R. Jewel	Petaluma	Best cheese under one year old	$10
Samuel Cole	Gilroy	Best cheese one year and over	$15
Samuel Cole	Gilroy	Sweepstakes on cheese—for the largest and best display of cheese	Diploma and $20

BUTTER.

Exhibitor.	Residence.	Article.	Premium.
William Johnston	Richland, Sacramento Co.	For best lot ten pounds butter in rolls	$10
E. F. Aiken	Sacramento	Best firkin of butter not less than twenty-five pounds, and three months old	$15

BREAD AND CEREAL FOOD.

Exhibitor.	Residence.	Article.	Premium.
Mrs. J. H. Wolf.....	Brighton.....	Best domestic wheat bread...	$5
Mrs. J. H. Wolf.....	Brighton.....	Best domestic brown bread...	$5
Mrs. E. F. Aiken.....	Sacramento.....	Best domestic corn bread.....	$5
Mrs. J. H. Wolf.....	Brighton.....	Best biscuit.....	$2

HONEY, CANNED FRUITS, PICKLES, Etc.

Exhibitor.	Residence.	Article.	Premium.
J. S. Harbison.....	Sacramento.....	Best ten pounds honey and beeswax.....	$5
Mrs. E. F. Aiken.....	Sacramento.....	Best canned tomatoes.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best canned blackberries.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned raspberries.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned peaches.....	$3
Mrs. G. G. Brown...	Sacramento.....	Best canned pears.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned apples.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned quinces.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned cherries.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best canned gooseberries	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned currants.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best canned grapes.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Largest and best varieties of canned fruit.....	Diploma.
Mrs. J. P. Odbert....	Sacramento.....	Largest and best varieties of canned jellies.....	Diploma.
Mrs. N. Clark.....	Sacramento.....	Largest and best varieties of canned preserves.....	Diploma.
Mrs. J. P. Odbert....	Sacramento.....	Best apple jelly.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best currant jelly.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best peach jelly.....	$3
Mrs. N. Clark.....	Sacramento.....	Best quince jelly.....	$3
Mrs. N. Clark.....	Sacramento.....	Best preserved quinces.....	$3
Mrs. N. Clark.....	Sacramento.....	Best preserved peaches.....	$3
Mrs. N. Clark.....	Sacramento.....	Best preserved pears.....	$3
Mrs. N. Clark.....	Sacramento.....	Best preserved apples.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best preserved plums.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best tomato catsup.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best cucumber catsup.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Mushroom catsup.....	Premium recom'ded.
Mrs. E. F. Aiken.....	Sacramento.....	Best pickled gherkins.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best pickled peaches.....	$3
Mrs. J. P. Odbert....	Sacramento.....	Best pickled tomatoes.....	$3
Mrs. E. F. Aiken.....	Sacramento.....	Best pickled onions.....	$3

BACON.

Exhibitor.	Residence.	Article.	Premium.
James Asbury.....	Woodland	Best cured bacon and hams...	Silver medal.

SIXTH DEPARTMENT.

GRAIN AND GARDEN SEEDS.

Exhibitor.	Residence.	Article.	Premium.
D. L. Perkins	Sherman Isl'd.	Largest display of grain seed.	$10
H. Cronkite	Brighton	Best two sacks white Tuscan wheat	$10
A. B. Gilbert	Brighton	Best one bushel white corn	$5
A. B. Gilbert	Brighton	Best one bushel early corn	$5
R. J. Markley	Sacramento	Best one bale hops	$5
F. Heim	San Francisco	Best two sacks Surprise oats	$5
A. J. Bigelow	Sherman Isl'd.	Best one sack Australian wheat	$10
A. J. Bigelow	Sherman Isl'd.	Best one sack Little Club wheat	$10
A. J. Bigelow	Sherman Isl'd.	Best one sack Russian barley	$5
P. H. Fisher	Brighton	Best one sack yellow corn	$5
Johnson Co. Agricultural and Mechanical Society	Iowa		Diploma.
E. F. Aiken	Sacramento	Best half peck castor oil beans	$5
John Studarus	Brighton	Best half dozen watermelons.	$3
D. G. Perry	Sherman Isl'd.	Best variety potatoes	$10
D. G. Perry	Sherman Isl'd.	Best variety yellow onions	$3
D. L. Perkins	Sherman Isl'd.	Best two varieties corn (dry and green)	$5
D. L. Perkins	Sherman Isl'd.	Best summer squash	$10
D. L. Perkins	Sherman Isl'd.	Best variety tomatoes	$5
D. L. Perkins	Sherman Isl'd.	Best variety cucumbers	$3
D. L. Perkins	Sherman Isl'd.	For largest and best variety of vegetables raised by one exhibitor	$50
D. L. Perkins	Sherman Isl'd.	One sack garden peas	$3
A. B. Gilbert	Brighton	Best variety of pumpkins	$5
Henry Hyser	Sacramento	Best three green flesh muskmelons	$3
Robert Williamson	Sacramento	Best half bushel Carolina sweet potatoes	$5
Robert Williamson	Sacramento	Best half peck white onions	$3
Robert Williamson	Sacramento	Best twelve carrots	$3
Robert Williamson	Sacramento	Best half peck sweet pepper (green)	$3
Robert Williamson	Sacramento	Best half peck sweet pepper (dry)	$3
Robert Williamson	Sacramento	Best six stalks celery	$3
Robert Williamson	Sacramento	Best six Hubbard squash	$3
Robert Williamson	Sacramento	Best half peck white kidney beans	$2
Robert Williamson	Sacramento	Best half peck cucumbers	$2
Robert Williamson	Sacramento	Best half peck tomatoes	$3
V. Russell	Brighton	Best mammoth pumpkins	$5
P. H. Fisher	Brighton	Best half dozen blood red beets	$3
J. H. Wolf	Brighton	Best and greatest display of melons	$10
J. H. Wolf	Brighton	Best and greatest display of squash	$10
J. H. Wolf	Brighton	Best mountain sweet watermelon	$2
J. H. Wolf	Brighton	Best half dozen sweet corn	$3
T. S. Chamberlain	Lincoln	Best Australian wheat	$10
John Smith	Sacramento	Best sugar beets	$3
John Smith	Sacramento	Best assortment tomatoes	$5

FLOWERS.

Exhibitor.	Residence.	Article.	Premium.
F. A. Miller	San Francisco.	For the best display of growing flowers	$25
F. A. Miller	San Francisco.	Best display of cut flowers	$25
Thomas O'Brien	Sacramento	Choice collection of flowering plants	$20
Dr. J. M. Frey	Sacramento	Display of rare and beautiful flowering plants	Silver medal.
Judge E. B. Crocker.	Sacramento	Display of rare and choice plants and flowers	Silver medal.

WINES.

Exhibitor.	Residence.	Article.	Premium.
C. Detton	Stockton	Best white still wine four years old	$10
C. Detton	Stockton	Best white still wine three years old	$10
J. R. Nickeson	Lincoln	Best white still wine two years old	$10
O. H. V. Association	Sacramento	Best white still wine one year old	$10
C. Detton	Stockton	Best red still wine four years old	$10
J. R. Nickeson	Lincoln	Best red still wine two years old	$10
J. R. Nickeson	Lincoln	Best red wine one year old	$10
B. N. Bugbey	Folsom	Best white sparkling wine	$10
O. H. V. Association	Sacramento	Best port wine	$10
J. R. Nickeson	Lincoln	Best claret wine	$10
Newell & Culbertson		Best sherry wine	$10
B. N. Bugbey	Folsom	Best exhibition of wines	$20
J. R. Nickeson	Lincoln	Best brandy one year old	$10
C. G. Carpenter	Diamond Sp'gs	Best brandy two years old	$15
Newell & Culbertson		Best brandy three years old	$25
C. G. Carpenter	Diamond Sp'gs	Best peach brandy	$15
Swan Brewery Co.	San Francisco.	Best porter	Honorable mention.
Swan Brewery Co.	San Francisco.	Best pale ale	Diploma.
Schæffer & Walter	San Francisco.	Pipifax bitters	Diploma.
William Hawkins	San Francisco.	U. S. A. Indian root bitters	Diploma.
J. Renz	Sacramento	Dr. Renz's herb bitters	Diploma.
Swan Brewery	San Francisco.	Best porter, ale, and brown stout	Diploma

FRUITS.

Exhibitor.	Residence.	Article.	Premium.
O. B. Shaw	Sonoma	Best twenty varieties apples	$40
A. S. Greenlaw	Sacramento	Best ten varieties apples	$20
C. W. Hoit	Sacramento	Best twenty varieties pears	$40
J. S. Bamber	Placerville	Best ten varieties pears	$20
E. M. Smith	Coloma	Best ten varieties peaches	$20

FRUITS—Continued.

Exhibitor.	Residence.	Article.	Premium.
E. W. Gavitt	Placerville	Best five varieties peaches	$10
J. S. Bamber	Placerville	Best ten varieties plums	$20
E. W. Gavitt	Placerville	Best five varieties plums	$10
O. B. Shaw	Sonoma	Best twenty varieties grapes	$40
J. S. Bamber	Placerville	Best ten varieties grapes	$20
A. J. Biglow	Sherman Isl'd	Best single variety grapes	$10
B. N. Bugbey	Folsom	Best and greatest varieties wine grapes	$40
R. B. Blowers	Woodland	Fine exhibit grapes	Diploma.
W. S. Runyon	Sacramento	Choice table grapes	Diploma.
Robert Williamson	Sacramento	Best display of seedling fruits	$10
J. R. Nickeson	Lincoln	Best general display of fruit, embracing best and greatest varieties	$100
C. G. Carpenter	Diamond Sp'gs	General display of fruit	Silver medal.
J. S. Bamber	Placerville	Best display of dried fruits	$10
Mrs. E. F. Aiken	Sacramento	General display of dried fruits	Diploma.
Miss F. W. Smith	Sacramento	Best dried figs	$10
Mrs. E. F. Aiken	Sacramento	Best twenty-four pounds raisins	$15
Mrs. E. F. Aiken	Sacramento	Best dried prunes	$10
O. B. Shaw	Sonoma	Best half peck soft shelled almonds	$5
E. M. Smith	Coloma	Best lemon quince	Special mention.
Mrs. J. Lohman	Sacramento	Best apple quince	Special mention.
C. W. Hoit	Sacramento	Best ripe undried figs	Special mention.
		Exhibitors of fruits from Leavenworth, Kas.; Boston, Massachusetts; Lee County, Iowa; Princeton, Illinois; Keosauqua, Van Buren County, Iowa; Farmer's Club (agricultural and horticultural), Milton, Wisconsin; Grand Rapids, Michigan; Louisville, Ky.; Iowa City, Iowa; Johnson County Agricultural and Mechanical Society, Iowa City, Iowa; Virginia Horticultural and Pomological Society; Kansas State Agricultural Society; Illinois State Agricultural Society; Rochester, N. Y.; Marshal P. Wilder, Boston, Massachusetts; Fairfield, Iowa; South Pass, Illinois; Jones County, Ia.; Cedar County, Ia.; Connecticut Board Agriculture; Shanghae, China.	Honorary diploma.
O. B. Shaw	Sonoma	Best oranges	$5
O. B. Shaw	Sonoma	Best lemons	$5
J. Rutter	Sacramento	Very choice samples of a large variety of grapes. (This entry, by mistake, was not on the committee's books, and did not, therefore, claim the attention of the committee on fruit)	Silver medal.

SEVENTH DEPARTMENT.

FINE ARTS.

Exhibitor.	Residence.	Article.	Premium.
D. H. Woods	Sacramento	Best life-size photograph in oil	$20
D. H. Woods	Sacramento	Best portrait painting in oil, by California artist	$50
F. Swanwell	Sacramento	Best landscape painting in oil, by California artist	$50
John A. Todd	Sacramento	Best specimens of uncolored photographs	$20
Oscar Kaltschmidt	San Francisco	Best specimen fruit painting	$10
Howard Campion	Sacramento	Best specimen of California landscape in oil, by California artist	$20
Oscar Kaltschmidt	San Francisco	Best exhibition of paintings	Diploma and $50
Harrison Eastman & Co	San Francisco	Best fancy paintings in water colors	Diploma.
Crane & Curtis	San Francisco	Best wood engraving	Diploma.
Mrs. W. E. Brown	Sacramento	Best porcelain painting	Diploma.
Pacific Business College	San Francisco	Best specimens of penmanship	$5
O. Schrader	Sacramento	Best specimens crayon drawing	$5
Sophia P. Gregory (pupil of Espina)	Sacramento	Best specimens pen drawing	$5
Mrs. E. C. Bingay	Sacramento	Best specimens pencil drawing	$5
C. C. Devine & Bro.	Sacramento	Best sculpture	$20
C. C. Devine & Bro.	Sacramento	Best collection of marble work	$20
Charles V. Rhodes	Sacramento	Carving on wood	Diploma.
Pacific Bridge Co	Oakland	Best model bridge	Diploma.
I. W. Taber	San Francisco	Display of large and very fine plain photographs	Silver medal.
P. A. Espina	Sacramento	Best display of pen drawing and ornamental penmanship	Silver medal recommended.
Arnold Bradford	Sacramento	Crayon drawing, by a boy	Diploma.
John Allen	San Francisco	Stone seal engraving	Silver medal.
Mrs. A. E. Wood	San Francisco	Ivorytype	Silver medal.
W. C. Butler	San Francisco	Best display of wood engraving	Diploma.
F. Marriott	San Francisco	*California Mail Bag*	Diploma.
John Nehrbass	Sacramento	Statuette and mining scene in confectionery	Special—Diploma.
Henry Fisher	Sacramento	Cases fine confectionery	Special—Diploma.
Robert Cowne	Sacramento	Samples ramie plant and fiber in different stages	Special.
Buckley & Strong	Merced	Samples California raised cotton, being sample of large quantity produced this season	Special—Hon. mention
F. Foster	Sacramento	Book binding	Diploma.
H. Wachhorst	Sacramento	Splendid display of jeweler's goods	Special—Silver medal.

REPORTS OF SPECIAL COMMITTEES.

MUSICAL INSTRUMENTS.

Sacramento, September 26th, 1871.

To the Officers of California State Agricultural Society:

The committee appointed to examine musical instruments report as follows:

We find on exhibition one grand piano, one square grand, and one parlor square, manufactured by Chickering & Sons, Boston, and exhibited by L. K. Hammer, agent; one grand piano, one square grand, and two parlor squares, manufactured by Hallet & Davis, Boston, exhibited by W. G. Badger, agent; one grand square piano and one colibri, manufactured by Mathushek; two parlor gems, manufactured by Marshall & Mendenhall; one portable pipe organ, manufactured by Derrick & Felgemaker; one reed organ and one silver flute, exhibited by John F. Cooper, agent; one parlor square piano, manufactured by George Hews, Boston, and exhibited by R. C. Marsh, agent.

On examination the committee have awarded first premium to L. K. Hammer for best grand piano, best grand square, and best parlor piano, exhibited by him and manufactured by Chickering & Sons, Boston.

They would also recommend that a special premium be awarded to John F. Cooper for his Mathushek colibri piano, which to all intents and purposes answers the requirements of a boudoir piano. They also recommend a special premium for his very fine Derrick, Felgemaker & Co.'s portable pipe organ. The reed organ and silver flute exhibited by him deserve special mention.

The fine display of Hallet & Davis pianos exhibited by W. G. Badger are also deserving of special mention. As is also the piano made by George Hews, Boston, and exhibited by R. C. Marsh, agent.

Respectfully submitted,

GEO. J. GEE,
JOHN McNEILL,
G. W. WALLACE,
JOHN N. TURPIN.

BABCOCK FIRE EXTINGUISHER.

Sacramento, August 22d, 1871.

We, the undersigned, having been appointed a special committee of the California State Agricultural Society to witness a trial of the Babcock Fire Extinguisher, and report upon its merits, respectfully submit the following:

The fire was composed of a pyramid of thirteen pitch pine tar barrels, with shavings in each, the whole thoroughly saturated with coal oil, making the most inflammable pile of material that could be devised for the test; the match was then applied, and after the whole mass was completely enveloped in flames and intensely hot, the word was given to apply the stream, when in an incredible short space of time—say three and a half minutes—the fire was completely extinguished.

This satisfactory test has given us perfect confidence in the capability of the machine as a fire extinguisher, and we cheerfully recommend it to the public, and that a premium be awarded.

G. SCHMEISER,
Chief Engineer Sacramento Fire Department.
JUSTIN GATES,
Wholesale Druggist.
W. A. KIRBY,
Exempt Sacramento Fire Department.

THE SALWAY PEACH.

Your special committee appointed to examine specimens of the "Salway Peach," a special entry by E. F. Aiken, Sacramento, beg leave to report as follows:

This is a large yellow freestone peach, imported from England in eighteen hundred and sixty-four, by the late Isaac Pullen, Esquire, of Hightstown, New Jersey; introduced into California by Edward F. Aiken, proprietor of Glen Gardens, Sacramento, in eighteen hundred and sixty-eight, and fruited for the first time in the year eighteen hundred and seventy-one.

James Alexander Fulton, in his new work on peach culture, describes it as follows:

"It is a large peach, of very great beauty and good quality, nearly round, with suture well defined towards the apex; terminal point distinct. Its distinctive virtue, however, is its late ripening—several days after the Smock, which has heretofore been considered our latest variety of freestone peaches."

The specimens consist of a box, and branches loaded with fruit, but scarcely ripe enough to show their color or give their flavor and texture correctly. Your committee, however, believe that the description quoted above *is fully sustained in this exhibit*, and that the time of ripening in this locality is from the twentieth of September to October twentieth.

The character of the wood and foliage indicates hardiness and comparative freedom from curl leaf. We believe that it is a valuable acquisition to our list of fruits and worthy of the attention of tree planters.

J. S. HARBISON,
A. P. SMITH.
ROBERT WILLIAMSON,
W. H. NASH.

PRESERVED WOODS.

Sacramento, September 23d, 1871.

To the President and Directors of the State Board of Agriculture:

Gentlemen: Your special committee have examined the specimens of wood, preserved and unpreserved, decayed and sound, etc., exhibited by the "Pacific Wood Preserving Company," of San Francisco, the details of which are set forth in the accompanying catalogue issued by the company, and beg leave to report as follows:

Fencing—The fences in common use in this State are made with redwood posts and Puget Sound fir boards. The posts are riven, being selected from such portions of the tree as split the easiest, viz: the top and branches. Such of the butt cuts of redwood timber as will retain all or nearly all of their original moisture will not decay; but this is not the case with the lighter and dry portions of the tree, such as are riven into fencing and railroad ties. Fence posts should certainly all be "preserved" for economy's sake, and the durability of the boards would also be greatly increased, though this is obviously less important.

Farm Dwellings and Granaries—The foundations of these should all be "preserved"—not only to prevent dry rot or decay of any kind, but to secure immunity against vermin and insects, nearly all of which are repelled by the hydro-carbon vapor absorbed into the preserved wood.

Farm Wagons and Agricultural Implements would be far more durable if subjected to the preserving process, which is one of the most effective means known of preventing decay and shrinkage of the wood from the iron.

The Wood Preserving Company have exhibited interesting specimens of the efficacy of their process in resisting the ravages of the *toredo nivalis* or marine worm, so destructive to piles and all harbor constructions. Though the recommendation of the best materials for harbor and coast work devolves upon the Chamber of Commerce and Board of Engineers, it is of interest to the State from its relations to the consumption of timber and the preservation of forests on this coast. Indeed, it is from a conviction of the importance of making the consumption and production of timber more nearly equal that your committee base their recommendation of this wood preserving process. In Europe stringent forest laws are found necessary to prevent the drying up of streams and rivers. To increase the durability of timber is equivalent to an increase of supply, and is consequently a question of public if not political economy. We are of the opinion that all public structures for local or State use, or whenever public money is expended and wood the material employed in construction, should be built with a recognition of the scientifically demonstrated value of this process. The application of wood to ship building on this coast is referred to in the annual address to the Society, delivered by the Honorable T. G. Phelps, on the twentieth instant.

We therefore cordially recommend a special gold medal to the "Pacific Wood Preserving Company" for their meritorious exhibition of articles which could not be classed under your catalogue.

EZRA S. CARR.

I concur: W. WADSWORTH.

CLAIMS FOR THE GOLD MEDAL FOR 1871.

FIRST DEPARTMENT.

CATTLE.

SAN JOSÉ, CALIFORNIA, December 20th, 1871.

To the Committee appointed on awards of Gold Medals of the State Agricultural Society in the first department:

GENTLEMEN: I propose to give you some reasons why I ought to have the gold medal awarded to my exhibition of Durham stock over all competitors at the late State Fair for eighteen hundred and seventy-one. I exhibited twenty-four head: one four year old bull—Glencoe—five cows, two three year old heifers, two two year old heifers, three one year old heifers, five heifer calves, two yearling bulls, and three bull calves. I will now state the number of premiums awarded to my stock at the different Fairs last Fall, beginning at the Bay District Fair. I exhibited fourteen head. The awards were as follows: Glencoe received the premium for the best bull four years old and upwards; Lady of the Lake for the best three year old cow; Lady Belle, best one year old heifer; Helen for the best heifer calf; the premium for the best herd was awarded to my stock. At the Santa Clara Valley Agricultural Fair I exhibited twenty head. The awards were as follows: Glencoe, best bull four years old and upwards; Sprightly took the premium for three years old and upwards, although she had to compete with aged cows; she also took the sweepstakes premium for all ages and breeds; Richmond for the best bull calf; Jeannie for the best heifer calf; and also the premium for the best herd. At the Stockton Fair Glencoe received the premium for the best four year old bull, and also for sweepstakes; Sprightly for the best cow three years old and upwards; Shoo Fly for the best two year old cow; White Swan for the best yearling heifer; Comet, special premium; also, the premium for the best herd. At the State Fair at Sacramento I was awarded the following premiums: Glencoe, the best four year old bull; Richmond, the best bull calf; Maggie, the best four year old cow; Sprightly, the best three year old cow; Mary Stuart, the best one year old heifer; and the premium for the best herd of any "breed not less than ten head, owned by one man;" also, made a draw for two other premiums, the first for yearling bulls, Comet, Sunlight, and Bolingbroke, the latter belonging to Werner & Hamill, of Davisville. The committee disagreed and called in the fourth man, and he awarded to Bolingbroke. The other was my two cows—Sprightly, three years old, Mary Stuart, one year old, and Mr. G. N. Swezy's Beauty, four years old. This was for sweepstakes for all ages and for any breed. The committee again disagreed and called in the

fourth man, and he gave the premium to Beauty. This shows that the competition was strong, and, further, that when the Judges had made up their minds there was no compromise.

The Fairs at San Francisco, San José, and Stockton would have done credit to any country much older than this, but the grand exhibition culminated at the State Fair. In addition to much of the stock shown at the Fairs mentioned—Mr. Moses Wick, of Butte, with sixteen head; R. M. Sparks, of Lincoln, ten head; Jesse Carr, of Monterey, eight head; Peter Saxe, ten head; R. B. Cameron, of Solano, ten head—all those mentioned above had been recently imported from Ohio, Missouri, Illinois, and Kentucky, by men of experience, for their own use, and, it is said, selected out of the best herds in those States. In addition to these, G. N. Swezy, of Marysville, ten head; Werner & Hamil, of Davisville, two yearling bulls, also imported; Robert Ashburner, of San Mateo, sixteen head; Dr. Holden, of Stockton, one aged bull; S. B. Whipple, two young bulls; Smith & Cox, of Sacramento, one three year old bull; W. F. Overhiser, of Stockton, fourteen head; John Brewster, of Galt Station, one fine three year old bull. All of these were thoroughbred Durham. Then comes J. R. Rose, of Petaluma, with a herd of Devons, as finished in form and color as can be shown by any breeder in the United States of that breed of cattle. It is due to the gentlemen above named to say that each and every one of them made a splendid exhibition; not that each animal shown was faultless, but that each showed some superior cattle, and should all have their full meed of praise for helping to make the Fair such a grand success. I will here mention some that I think could not be excelled by any stock from any country. I will begin with the exhibit of G. N. Swezy (who did good service in traveling with me among the stock men of the State to induce them to bring their stock to the State Fair)—"Kate Dunn" and "Beauty." They may have equals, but no superiors. His young cattle looked well, and to his credit he had them in a finished condition. Then I will mention "Heroine," "Bell Republic," and also "Glenwood," belonging to Mr. M. Wick, of Butte. They are splendid specimens of the Durham stock, but not in that high culture they ought to have been. Werner & Hamil's yearling bull "Bolingbroke" is among the finest of his age. I mention these because they filled my notion in form and color—not that they were better than some others that were shown. There were ninety-two head of Durham, eleven Devons, a few Ayrshires and nineteen graded—making about one hundred and thirty. In my opinion these ninety-two head cannot be beaten at any Fairs in the United States. I was awarded six premiums—some of the most important—at the State Fair, for the best bull, the best cow, the best three year old cow, the best one year old heifer, the best bull calf, and the best herd. I claim that I have produced evidence enough to entitle my exhibition of Durham stock to the gold medal, providing you think the cattle was the best on exhibition in that department; but you may incline to think that the horse department made the best exhibition. Well, in numbers they had a little over half. I admit in every class of stock the exhibition was good. In the horse department it was more than good. Some of the horses shown have a national reputation, and deservedly so—though in numbers there were but few of that class. I think that the cattle greatly predominate in the aggregate over all other classes of stock, in their wonderful size and finished form. Now, if you are in doubt as to how you ought to award the gold medal from the successful exhibition in each class of stock, and are forced to give some considera-

tion as to the true value of each class of stock to the human family to sustain life—or in plain words, to furnish food and the necessaries as well as the luxuries for all the human family, the cattle must get the medal. I think it will only be necessary to call your attention to a few facts to prove this. Beef, butter, cheese, cream, and milk go into the consumption, in whole or in part, in every family throughout the Christian world. Take your wealthy man, deprive him of the produce of the cow, what he terms the real luxuries of life, and what would supply its place—would the horse, sheep, or in fact any other or all other stock? They would not. Then come down to a poor man with a family—give him a cow, and there is food to raise his children on—and that of the best. The truth is, that more poor families are kept from poverty and suffering, by the produce of the cow, than from any other one source, and sometimes, than from all others. Here I have only mentioned a few of the benefits of the cow. Just take, for instance, the item of leather—what an amount of trade it produces in a single year—what comforts it gives, and how universally it is used and in a variety of ways. Then the tallow is used for many valuable purposes. Even the bones, horns, and hoofs are valuable. Now look back through these various channels and see their magnitude. Beef feeding its millions, rich and poor feasting upon it. The same to be said of cheese, butter, cream and milk; the rich using them and esteeming them a great luxury; the poor man taking great care of his cow from the fact that she gives more and better food for his wife and little ones than ten times the amount invested in anything else. Now let me ask you to look at this matter through all its bearings in reference to the human family. Can you compute the amount it produces in money in a single year even in the United States, let alone the world? This is only the cash view of the matter. Now if you will make an attempt to estimate the blessings it produces to mankind in the matter of food to sustain life, in luxuries and in the real comforts, they swell up in magnitude until the mind becomes wearied. Now I ask is there any other single class of stock that would begin to supply their place. You can have but one answer—that is no. Then cattle should have the preference. First, because they made the best exhibition; secondly, because they are worth more to man; and lastly, as I made the best exhibition in that department I ought to have the gold medal awarded to my stock.

There is another interesting view to be taken of this subject. Look at the nations of the earth and contrast them. Take those that use the greatest quantity of beef, and at a single glance you can see their superiority, physically and intellectually. Look at the beef eating English. What nation in Europe, or elsewhere, are their equals in everything that go to make up the elements of a great people. Cooped up on a small island, their commerce extends to every part of the earth; their sails whiten every ocean. It is an old saying that "Briton rules the waves." Her soldiers have fought in every clime, and have conquered in nearly every instance. Their only failure was when she attacked the Yankee nation. It took a second trial to convince them that we were a beef eating people ourselves. What has their intellect, industry, and enterprise done for themselves and the world? Look at their manufactories of every kind—railroads, great public improvements; their vast capital meandering through every clime, entering into every pursuit of life; their language is fast becoming universal. I contend that the nations of the earth are superior to each other in proportion to the difference of beef consumed.

I think it will be admitted that the Americans are the first nation of the world, the English next, Germans next, French next; these four nations are the superiors of all other nations—if the French had been beef eaters in place of horse eaters they would have been the masters of the Prussians. There can be but one opinion, and that is in favor of the nation that consumes the greatest quantity of beef. Beef being the most nutricious meat known to man, producing a larger frame, more muscle, less disease, better health, longer life. These give vigor and freshness to the intellect. I come to the conclusion that beef has had much to do in making great men and nations. Much could be said of the horse, his splendid appearance, his grand speed on the turf, but these are but fancy; the two-twenty or the seven-nineteen and a half does not make bread for the poor, and greatly tends to idleness if not to something worse; while on the contrary—breeding of cattle leads to industry, produces food for man, has no immoral tendency, keeps young men out of town, away from the snares of the world, gives them industrious and frugal habits—taken in all its branches one of the most useful occupations in life. One more thought and I am done. In all my acquaintance through life I have observed that the man who gives strict attention to cattle has done well, and more especially in this country. Many large fortunes have been made and all have done well. While on the contrary, if horsemen have made fortunes they are exceptions to the rule.

Most respectfully, your obedient servant,

COLEMAN YOUNGER.

SECOND DEPARTMENT.

CARRIAGES AND WAGONS.

STATEMENT OF H. M. BERNARD, OF SACRAMENTO.

To the Honorable Committee on Gold Medal:

GENTLEMEN: I submit the following claim for the gold medal in the second department. I commenced carriage and light wagon work in this city nearly twenty years ago, and although nearly discouraged many times by so very many Eastern buggies and carriages being shipped to this market by capitalists, I still kept on contending with them, inch for inch, and to-day there is not one fiftieth part of the carriages and buggies imported that were fifteen years ago. Although my capital was limited indeed, I invested every dollar in the business and built thousands of dollars worth of work every year, giving employment to quite a number of hands and saving thousands of dollars to the State every year, in keeping the money among our own merchants and mechanics. My work has earned a reputation for itself, for style and durability, second to none in the State, and superior to any that can be

imported. When the State Fair was first organized in this city I was one of its supporters, and exhibited my own manufacture of carriages, wagons, hubs, and wheels from year to year, until to-day I can boast of forty-two premiums, taken at the State Fair; also, the first premium on light work, at the Mechanics' Fair held in San Francisco in eighteen hundred and fifty-seven. I also went to the upper District Fairs with my carriages and wagons, showing the people of the country what we could do in Sacramento in the manufacturing line. Both at Chico and Marysville I have been well rewarded for making a display at their Fairs, by disposing of my work and receiving twenty first premiums, besides several orders for work. This makes total premiums received from the different Fairs held in the State for my own manufacture sixty-three, besides the gold medal of eighteen hundred and sixty-nine. I refer to the books of the above societies to bear me out in this statement.

Gentlemen, I exhibited at the last State Fair, of my own manufacture, the following articles: One fine family carriage, of the latest pattern; one farmer's family carriage; six top buggies, of different styles and patterns; one light track sulky, weighing sixty-four and three-fourths pounds; one spring market wagon; one street goods wagon; also, twenty sets of white hickory carriage and wagon wheels, entered for premiums, but for want of room in the Pavilion I had to place them outside, where I exhibited fifty sets, making a prominent feature in the exhibition, as they were shown without paint. Cash value of my exhibit, seven thousand one hundred and fifty-five dollars.

I claim to have taken more premiums than any other mechanic in the State, and to have done more towards stopping imported carriage work to this State than any mechanic in my line of business. I employ none but the very best workmen, and use nothing but the best material; my lumber is always a year or two on hand before it is worked, and those who use my work will bear me out in this particular. While exhibiting my work at Marysville a few weeks ago, I was invited by Mr. Dodsworth, who keeps a livery stable there, to visit it. On doing so, I found one of my make of buggies there, in good condition, that I built sixteen years ago, and has been in constant use ever since. Another instance: I built the first two-seated carriage made in Sacramento, in the Fall of eighteen hundred and fifty-three, and sold it to Mr. Charles Justice, of Bear River, in the Spring of eighteen hundred and fifty-four. It is doing good service yet. I merely mention this to show the superiority of California manufacture over any imported article.

On the above exhibit I made this year I received six premiums, and now claim the gold medal for making the largest and most meritorious exhibit in this department.

All of which I most respectfully submit to your consideration.

Respectfully,

H. M. BERNARD,

Carriage Manufacturer, corner Sixth and L streets, Sacramento.

WAGONS AND PLOWS.

Statement of W. B. Ready, of Sacramento.

To the Committee on Gold Medals, offered by the State Agricultural Society for eighteen hundred and seventy-one:

Gentlemen: Permit me to present my claims to the gold medal for the most meritorious exhibition made in the second department of the late Fair. My exhibition consisted of two gang plows of different styles of manufacture, one trotting buggy, two farm wagons of different sizes and finish, and one self-sharpening cultivator, all of which were made at my shop, numbers three hundred and one and three hundred and three J street, Sacramento.

I claim especial merit for the Challenge Gang Plow, it being my own invention, patented as early as eighteen hundred and sixty-one, and improved by myself from time to time, until at present it has no equal in the State or United States.

The peculiar merit of this plow over all others is its light draft. The line of draft being placed at a point below a horizontal line with the top of the standard of the plow, all unnecessary weight on the wheels is avoided.

Again, all my plows of the same pattern are exact duplicates of each other, so that extras are always obtainable to fit any one of my plows in use anywhere, without delay or extra expense. The mechanical parts of this plow are simple, strong, neat, and durable. The plow can be managed easily by a boy, the power necessary to raise and lower it being half less than is necessary to perform the same objects on any other plow in use.

The trotting buggy too is built on a principle of my own discovery, and is an entirely new feature in that line. The entire vehicle weighs but one hundred and fifty-five pounds, and it will safely carry three hundred and fifty pounds. The springs are made of wood with spiral springs attached in such a manner as to secure equal strength, elasticity, and durability without the expense and weight of steel springs. If there is merit in originating or inventing labor-saving machinery superior to that of merely manufacturing it, then I claim that superior merit for the two articles above named. I have been engaged in the manufacture of agricultural implements in this State for more than fifteen years, during which time I have kept within the State hundreds of thousands of dollars, which have been distributed among hard working mechanics, whose families have resided here among us, adding wealth and prosperity to the State. The money which I have paid these people has in turn gone to the farmer to pay for the products of the farm, thus encouraging and sustaining California agriculture and California industry generally. I have at great expense furnished my shop with suitable machinery, by the use of which I am successfully competing with the importers of goods of the description I manufacture. Since the State Fair I have taken several orders for wagons of different kinds, also a great many for plows, harrows, and cultivators, and I am now building and expect to sell between this and the commencement of the new year one hundred gang plows, besides many other articles in my line.

I will here state that on account of the increased impetus given to the importing trade by the completion of the Pacific Railroad, and the

unusual drought of the past season, I have been able to meet all demands and to place my business on a sound and promising basis, and with proper encouragement and a liberal share of patronage, hope soon to be able to add still greater facilities of manufacture, and thus be of still greater benefit to the State, and defy competition from abroad.

I am glad to be able to state that the mechanical industries of the State are looking up, and the prospects of all mechanical and manufacturing trades are growing brighter. My own business in the year eighteen hundred and seventy-one has been at least double what it was in eighteen hundred and seventy.

Without further comment, I will state that I base my claim to the gold medal:

First—Upon the merit of inventing the plows and trotting buggy;

Second—Upon the fact that my exhibition embraced a greater variety of home manufactured agricultural implements than any other exhibition, and that each article exhibited by me was equal, if not superior, to similar articles exhibited by any other person.

All of which is respectfully submitted, by

Yours, etc., WILLIAM B. READY.

WAGONS.

STATEMENT OF E. SOULE.

To the Gold Medal Committee:

GENTLEMEN: As there is a gold medal to be awarded to the most meritorious exhibition in each of the seven departments, as an exhibitor in the second department I thought it proper to present to you for your consideration the following statement: With regard to the extent of my manufacture for the last twelve months, of farm, lumber, and express wagons, I have built and sold one hundred and twenty farm wagons, at an average of one hundred and sixty dollars each, amounting to near twenty thousand dollars. Have built and sold of express and other wagons to the amount of thirty-five wagons, at an average of two hundred dollars each, amounting to seven thousand dollars. Also, about five thousand dollars of repairs, making upwards of thirty thousand dollars. The above work has all been manufactured in Sacramento, and the money paid to an average of from eighteen to twenty men and for material purchased here. This money has come from Nevada, Idaho, Oregon, and from many parts of this State, and so great has been the demand for these wagons that the capacity of my works has been inadequate to fill my orders for the last eight months. Another important feature in home industry—most of these wagons have been manufactured from thimble skeins cast in this city, from patterns of my own make, amounting to some one thousand five hundred dollars the last year. Heretofore all had to be imported. The important improvements on my thimble skeins has made them preferable to any other. I have also been testing our locust of home growth for the past three years, and have found it and recommended it as being equal if not superior to any Eastern growth I have ever seen. Through my experiments and exhibitions of this timber I have called the attention of hundreds of farmers to the importance and value of the timber, and I have no doubt

it has been the means or cause of hundreds of acres of this valuable timber being planted, that will ultimately save thousands to the State in place of imported timber. As our agricultural interest has become the chief interest of this State, and the object of our State Agricultural Society is to foster all the industries of our home productions, I will briefly state there has been a large quantity of farm wagons imported from Michigan, Illinois, Wisconsin, and Indiana, amounting to over one hundred and fifty thousand dollars a year of money taken from our mechanics, our families, and our merchants, and sent away to enrich Eastern manufactures and to empoverish our State. This can be remedied by the aid and encouragement of our people, provided it is properly shown to them the importance of sustaining our home manufacturers. My object has been for the past year to do all in my power to show and prove that a success can be made in the manufacture of our farming and agricultural implements here. With the aid of capital and experienced mechanics all our farming implements can be made at a profit here, and save a large amount of money now being paid to Eastern manufacturers. I will say to your honorable Board, you have shown conclusively to me that you appreciate the importance of fostering and sustaining the industries of the country, and if in your judgment you think I am entitled to the gold medal of the Society, it will stimulate me to renew my efforts to attain the highest success in home industries.

Yours truly. E. SOULE.

CARRIAGES AND BUGGIES.

Statement of Pollard & Carvill, of San Francisco.

To the Gold Medal Committee:

As we have been awarded the first premiums at the late Fair held at Sacramento for the best display of carriages and buggies, and are competitors for the gold medal to be awarded for the manufacture of articles most useful and most meritorious to the State in the class to which we belong, we have deemed it proper to suggest to you some reasons and considerations why the gold medal should be awarded to us:

First—We are one of the oldest carriage manufacturing establishments in the State. From small beginnings and under many discouragements in former years we have finally succeeded in profitably employing and developing California labor, skill, and capital in an important branch of manufacture, and in building up and establishing a prosperous business in spite of Eastern cheap labor, capital, and competition.

Second—We are the only company on this coast that strictly confines its business to the manufacture of Clarence coaches and fine carriages, in successful competition with the celebrated establishments of Brewster and Rogers of New York; and we have made the manufacture of them our specialty, that we might secure the highest excellence and command the market on this coast.

Third—During the past year we have manufactured twenty-four first class Clarence coaches, of the value of forty thousand dollars, and about twice that amount in value of buggies and other fine carriages; three fourths of which amounts were the direct product of California skill

and labor, thus saving to the State from ninety to one hundred thousand dollars, which would otherwise have been sent out of it, and stopping the importation of Clarence coaches entirely, and other fine carriages to a considerable extent.

Fourth—The business which we have thus established upon a basis which defies competition is destined to expand in importance as the wealth and population of the State increases, until, in the very near future, it will save to and retain in the State hundreds of thousands of dollars annually, which would otherwise be sent out and lost to the State, and thus deprive large numbers of our most skilled mechanics of employment.

Fifth—We are also hoping and expecting that many of the materials required in the manufacture of carriages, in consequence of the steadily increasing demand for them created by our business, will soon be produced in our own State, thus largely extending the field of productive industry.

From these considerations we deem ourselves entitled to the gold medal to be awarded to our class, and submit our claim to your favorable consideration.

Respectfully yours,

POLLARD & CARVILL.

PATENT EXTENSION SIDE-STICK.

STATEMENT OF JOHN F. UHLHORN, OF SACRAMENTO.

To the Honorable Committee appointed to award Gold Medals:

GENTLEMEN: Having made an entry competing for a gold medal to be awarded by your honorable body, I beg leave to present the following claims:

First—It is the only practical invention introduced to the printing business invented and manufactured in California, and is being extensively used by all the leading job offices in San Francisco and Sacramento, to whom I cheerfully refer.

Second—It meets a want that has long been felt in job printing—that is, an adaptable side-stick. It can be adapted to any size form in a moment, and possesses the merit of extension without any drawback in loss of strength. The extension is unaccompanied by any change of justification, which is preserved with mathematical accuracy by the principles on which the invention is based.

Third—It is a time, labor, and material-saving apparatus. It effects an important saving of time, as it is only necessary to draw it out to adapt it to any form, and thus the use of the saw is dispensed with; the old method being to cut each size side-stick to each particular size form. It saves material as thus: with ten side-sticks of the old pattern but five forms can be locked up unless the sticks are cut down, and to waste, as well as involving loss of time, while with the "extension side-stick," comprising ten pieces, over fifty different sizes can be locked up without any waste of material, extra labor, or unnecessary loss of time. Being made of brass, they will last as long as the chases themselves, while with the wooden ones continually wearing out it is a constant expense. The importance of and gain in general convenience and saving of time will be readily appreciated by all who are familiar with the "art pre-

servative," and is apparently destined to revolutionize that particular department in which it is applied.

I will give fifty dollars to any one who can offer a practical objection to the invention.

The following are some of the many notices this invention has received by the press of California:

[From the Record.]

Useful to Printers.—John F. Uhlhorn, of this city, in H. S. Crocker & Co.'s job office, has invented and patented one of the most useful articles for a printing office that we have ever seen, the same being an extension "side-stick," an article that, while effecting an important saving in time, causes an equal economy in material, as with it there can be no cutting down to fit "forms" of different sizes nor wearing out. Any printer who sees them will at once acknowledge its great practical benefit to the craft. They will be found especially useful to country newspapers and job offices.

[From the Union.]

Extension Side-Sticks.—John F. Uhlhorn, a practical printer of this city, has invented an extension "side-stick," which has been in use in one of the Sacramento job offices for three months, and during that time, we are informed, has performed its work admirably, saving the trouble and vexation frequently experienced, in job offices especially, in fitting "side-sticks" to "forms."

[From the Reporter.]

Valuable Invention.—John F. Uhlhorn, an ingenious journeyman printer of this city, has invented and patented what is termed an extension "side-stick." [We would suggest right here that those uninitiated in the sublime mysteries of the printing business need not read any more of this item, because they won't understand it.—Reporter.] With the wooden "side-sticks" at present in use in job printing offices much trouble, vexation of spirit, and loss of time are frequently incurred in fitting "side-sticks" to "forms" required in a hurry. Considerable expense, too, results from cutting up furniture for odd sizes, etc. This contrivance puts an end to that trouble. It is an adjustable arrangement, and can be lengthened or shortened in a second to fit "forms" of any size, and no loss of strength results from its extension. The use of the saw is dipensed with by this invention; it effects a great saving in material, and the time saved will pay the cost of the article in a few weeks. The job printers of this city and San Francisco have already commenced using these time and labor savers, and all express themselves fully satisfied. Being made of brass, these "side-sticks" are not liable to wear out in a hurry. Parties desiring further information can obtain it from Mr. Uhlhorn, at the office of H. S. Crocker & Co.

I hope you will make due allowance in passing your judgment on the classification of articles in the department to which I have been assigned. My article does not strictly come under the heading of any department as laid down in the catalogue of last year, but comes better under the heading of "Useful Inventions."

Respectfully yours, JOHN F. UHLHORN.

STEAM PUMP.

STATEMENT OF A. L. FISH, OF SAN FRANCISCO.

Committee on Gold Medals:

GENTLEMEN: At the last State Fair I exhibited Knowles' patent steam pump. There being no competition it would naturally be entitled to the first premium, but as a most meritorious machine I ask that a gold medal be awarded it. The grounds upon which I would base such claim are as follows, to wit:

First—As a simple, durable, and economical apparatus for raising water for irrigating, mining, or any other purpose, it is without an equal—there being nothing so generally required on the Pacific Coast as an economical water lifter. (I would respectfully refer you to the trial by Mechanics' Institute Fair, of San Francisco, ending September ninth, eighteen hundred and seventy-one—showing a saving over the Hanscom water lifter of thirty-seven per cent, and receiving the highest premium and diploma over all other steam pumps.)

Second—This pump has no fly wheel, no intermediate connections, and is without centers or dead points, water working the valve the same as steam, consequently it will start from any point of the stroke, requiring no lever or hand work to start the valve or piston.

Third—The surfaces are all ground, requiring no rubber packing.

Fourth—The valve being positive under all circumstances, the pump may be placed down in the deepest mines connected with a steam pipe to the boiler, the pump being controlled by the engineer on top of the ground.

Fifth—The suction and discharges are all very large; the openings in the pump correspond; the valves are of large area, requiring but short lifts. Valves of different material and kinds to suit different purposes.

Sixth—The workmanship is superior and the material of the very best.

As a worthy machine, standing at the head of its class, a machine generally required and deserving the highest award, I ask you to give it a gold medal for its intrinsic worth and as an advertising card.

Yours respectfully, A. L. FISH, Agent.

BOOT SCREWING MACHINE.

STATEMENT OF NICHOLAS LUMSDEN, OF SACRAMENTO.

To the Committee on Gold Medals:

I claim a gold medal for my screw machine because:

First—It is easily made, and can screw boots on unplated lasts, which no other machine can do.

Second—When lasts are plated with iron my machine, in the hands of an ordinary workman, will screw the bottoms on from four to six dozen pairs of boots in one day; boots which are sold at from six dollars to nine dollars a pair.

Third—The price of my machine is fifty dollars; other machines cost

one hundred and twenty-five dollars to four hundred dollars to screw boots on lasts when they are plated with iron.

Fourth—My machine is not one tenth the weight of other machines, and is as strong, and will last a lifetime. It is a California invention, and patented.

For the merits above stated I claim a gold medal.

Yours truly, NICHOLAS LUMSDEN, Inventor.

GAS BURNER.

STATEMENT OF C. B. BROWN, OF PLACERVILLE.

To the Gold Medal Committee:

I see by an advertisement that parties applying for the gold medal at the State Fair are required to make statements of their claims for such. My claim is:

First—That my self-generating gas burner is the first and only one of this class of burners that has ever been invented in this State and secured a patent therefor.

Second—That it is the only self-generating burner that produces a perfect combustion of the gases.

Third—That it produces a clearer and whiter light than any other burner or gas machine in use.

Fourth—That it manufactures its own gas as fast as required for use, without any machine but the burner, and at a less cost than any other burner or machine for the amount of light that it produces.

Fifth—That it is perfectly safe from explosion.

Most respectfully yours, C. B. BROWN.

GAS MACHINE.

STATEMENT OF A. D. WELL, OF THE PACIFIC PNEUMATIC GAS COMPANY, SAN FRANCISCO.

To the Gold Medal Committee:

The original inventor of this kind of works was a Mr. Rand, an Eastern gentleman, who has since become famous as the discoverer of petroleum gas. He never made it successful, nor have any of his Eastern assignees. We took hold of it, remodeled it in every part, struck upon many important improvements, some of which are patented as original inventions by members of our company, and have made these works an extraordinary success.

For a year past we have had a powerful opposition, who have not been scrupulous in their efforts to retard our progress; but the company is stronger and its machines in better repute to-day than ever.

For brilliancy of light, for economy, for simplicity, efficieney, certainty, and security, they are not only unexcelled, but there are no machines that can compare with them.

We have no customer—out of the many in California—who will say less for us.

We claim that all the distinguishing parts of these works, which are its real merits, are California inventions.

I am yours, respectfully, A. D. WELL, Secretary.

GOPHER TRAP.

STATEMENT OF GEORGE A. LLOYD, OF SAN FRANCISCO.

To the Gold Medal Committee:

GENTLEMEN: Our object in making application for the gold medal for the gopher trap exhibited at the State Fair, held September eighteenth, eighteen hundred and seventy-one, is to show the superiority it has over all others now in use, and over all others now on exhibition throughout the State. It has been acknowledged by all that have seen and used it that the animal has no escape from it. It goes for them. Large sums of money have been expended by some of our farming districts for the capture of the gopher and squirrel with but little success. Since the introduction of our trap into Alameda there have been hundreds killed, thus showing the great value of the trap. Again, it is both novel and useful.

Your award will gratify and stimulate the inventor, and will also greatly enhance the value of the invention by increasing its use.

Yours respectfully, GEORGE A. LLOYD.

ENDLESS ROPEWAY.

STATEMENT OF A. S. HALLIDIE.

To the Committee on Award of Gold Medals, State Agricultural Society:

GENTLEMEN: In explanation of the system for the economical transportation of ores, rock, etc., over mountainous countries and difficult roads, exhibited by me at the late Fair of your Society, I beg to make the following statement:

This system was invented by myself to meet a great want in the rough mining regions on this coast, and to provide means whereby material can be transported at low cost and in large quantities, thus enabling the mine owner to convey the ore from the mine to the reducing works, especially low grade ore, and under conditions and circumstances when it would otherwise be practically impossible, or nearly so.

In order to make this statement clear and intelligible, I shall have to refer to diagrams accompanying this; but I may say that the general system is by means of an endless steel wire rope, which, passing around

pulleys of large diameter at each end of the line, and being supported at intervals on guide pulleys, is set in motion and carries with it the material to be conveyed.

The complete system has been a subject of many inventions, each of which is secured by United States patents granted to me.

There is placed at each end of the line—that is, at the mine and at the reducing works or mill—a grip pulley. The function of this pulley is to transmit power to or from the endless wire rope. By reference to Figures 1 and 2 it will be seen how this is accomplished. Figure 2 is a general view of the pulley, at the circumference of which are fitted clips, which, by the pressure of the rope, close over and grip the rope, thus preventing the rope from slipping around the pulley.

Figure 1 is a section of the rim of the pulley; *h*, rope; *ii*, clips, working in recesses cast in circumference of the wheel (*LL*), and on fulcrums (*xx*). The part *K* is cast separately and bolted on to the wheel after the clips are fitted.

On the line of the route and at distances of about two hundred feet—the distance, however, depending on the configuration of the country—are erected strong posts, having cross arms (like telegraph posts) sufficiently high above the ground to clear any obstruction; these posts are well stayed and firmly planted. On each end of the cross arm are fitted sheaves or bearing and guide pulleys, in manner shown in Figure 3; and it will be seen on reference that there are two pulleys on each end of the cross arms—the upper pulley has a quarter circle groove, the lower pulley a semicircle groove; and the inner flanges of the pulleys run in close contact, but between the outer flanges there is a space equal to half the diameter of the rope; this space is left to enable the carrier (Figure 4) to pass, and the pulleys are placed as shown in Figure 3, to keep the rope in the groove of the pulleys and under control—*a* being the upper pulley, *b* lower pulley, *h* rope.

The grip pulleys at the end of the line and the guide and bearing pulleys of the posts on the line of the route being now in position, a steel wire rope made from patent tempered steel wire, and about three quarters of an inch in diameter is stretched and placed around the end pulleys and between the guide and bearing pulleys. The two ends are brought together and spliced by a long splice, thus forming an endless rope. It is obvious that if the grip pulley is set in motion by suitable gear attached to the steam engine, water wheel, or whatever power may be employed, it will actuate the rope in the direction of the pulley without difficulty, as it is supported at intervals of about two hundred feet by the pulleys, as shown in Figure 3. Now, if suitable receptacles are provided, distributed, and attached to the wire rope and so adjusted as to pass by all these pulleys and posts, the rope will convey by its motion these receptacles from one end of the line to the other. In order to obtain this result I have invented various contrivances, but will describe but the one shown in the model exhibited at your late Fair.

At distances, say fifty feet on the steel rope are attached carriers, secured to the rope by their steel clasps, which surround the rope and in form as shown in Figure 4, running off from the upper quarter of the rope and the upper side of the carrier being tangent to it—the strength of the carrier being increased in proportion to the length of the arm from the rope. On the outer end of the carrier a journal fitted with collars is turned so as to receive a suspension bar fitted to the journal, which is allowed to swing, hanging vertically by gravitation, and being bent or curved sufficiently enables it to pass by the bearing pulleys. By

referring to *c*, Figure 3, this is shown in connection with the carrier, rope, and pulleys, and will be understood at a glance.

The load usually attached to one of the carriers is from seventy-five to one hundred and fifty pounds; but I have suspended and carried eight hundred pounds on an ordinary carrier, as a kind of test load.

For conveying ore boxes or sacks one of these carriers is employed, as the load rarely exceeds one hundred and twenty-five pounds; but for a load of three hundred to four hundred pounds, two carriers are employed in manner shown in Figures 5 and 6.

The ore box is usually made self-dumping, and the frame is provided with joints necessary to enable it to turn all curves, vertical or horizontal. For still greater loads the number of carriers can be increased in like manner.

In Figures 3, 5, and 6 the arrangement of the pulleys is such that any vertical angle can be made by the rope, and the load can be conveyed over any mountain, ever so steep, or across any valley; but to turn a horizontal angle, or to pass around a spur of a hill, a different arrangement of pulleys is necessary. The manner in which this is done is shown in Figures 7 and 8.

Figure 7 shows the mode of turning an acute angle.

The projecting arms of the carrier (Figure 4) prevents the application of a horizontal pulley at the interior angle; but in the exterior angle this is the usual mode, and but one pulley is necessary.

In passing an acute interior angle two horizontal pulleys are used, the rope passing on to the farther pulley half around, thence to the nearer pulley, and thence in the direction required, in manner shown in Figure 7; the rope running in the direction of the arrows.

In passing a moderate angle or curve (Figure 8) a series of pulleys are so placed that the rope of the interior angle *leads fair* on to the pulleys, and is slightly deflected in passing off, leading fair on to the next pulley, and so on until the curve is completed. I find that the rope should not be deflected between one set of pulleys from a true line to exceed ten degrees. By referring to Figure 8 it will be seen how this is done.

Figure 9 shows another method of conveying a light car containing ore. The lower end of the suspension bar attached to the rope is fitted with a bar set at an angle and fitted with notches. The car is placed on a track slightly descending. As the notched bar comes along it passes between guides and catches a similar bar attached to and over the car, retaining it in the notches, and carries the car along the track, which being descending is separated from the car and the car is then carried along to its destination, where it strikes an ascending track which lifts the frame of the car above and away from the suspension bar, thus leaving the car behind.

Having thus described the modus operandi of my system of transportation by means of an endless rope, and which has been perfected after many years of study and experiment, in accordance with the general suggestions contained in your notice I will add some data of work and cost. Speed of rope, say 200 feet per minute; weight of each load, 100 pounds; distance between each load, 50 feet; then $\frac{200}{50} \times 100 = 400$ pounds per minute $\times$ 60 = 24,000 pounds per hour, or 120 tons per day of ten hours or 288 tons per day of twenty-four hours. The amount of ore deliverable per day can be more or less, according to requirements. The cost of construction varies according to location and work to be done, but may be placed at from five thousand dollars to seven thousand five hundred dollars per mile. The cost of delivering material, includ-

ing wear and tear, interest, and all expenses, is from fifteen to forty cents per ton per mile.

By reference to Figure 10 a general idea is conveyed of the working of this system. The distance such a line can work is limited only by the capacity of the power employed and the strength of the rope. Its most economical application would be for lines of above three miles, but there is no reason why lines of fifteen or twenty miles in length, with the steel wire ropes of the high tensile strength now made, would not work to advantage.

I conceive this of so much importance to the public generally, especially the mining public, that I ask for it your careful attention.

It is applicable to many uses other than for conveying ores from the mine to the mill, as for instance: carrying agricultural produce to the nearest depot, especially to ships in an offing; for conveying coal to gas works, or beets to the sugar mill; for carrying sand or rock to fill embankments, or grade lands; for conveying light material or passengers over any difficult road. And it has these advantages: no grading or road building is required; it can work under all circumstances of weather, with great depths of snow on the ground during heavy storms and freshets; it can run constantly without rest, as well during a dark night as a clear day; it can cross deep gorges and chasms; it can pass around precipitous bluffs and perpendicular cliffs; the rope can never leave the posts or sheaves; it can furnish and transmit power when there is sufficient descent, by its own gravitation, or by an engine attached to either end. It can be constructed and worked cheaper than any other system or road can be constructed and worked.

A. S. HALLIDIE.

October 28, 1871.

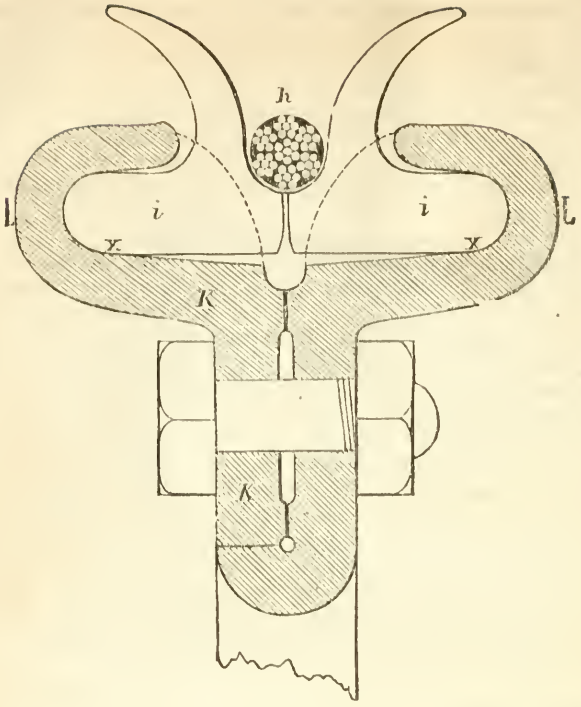

Fig. 1.

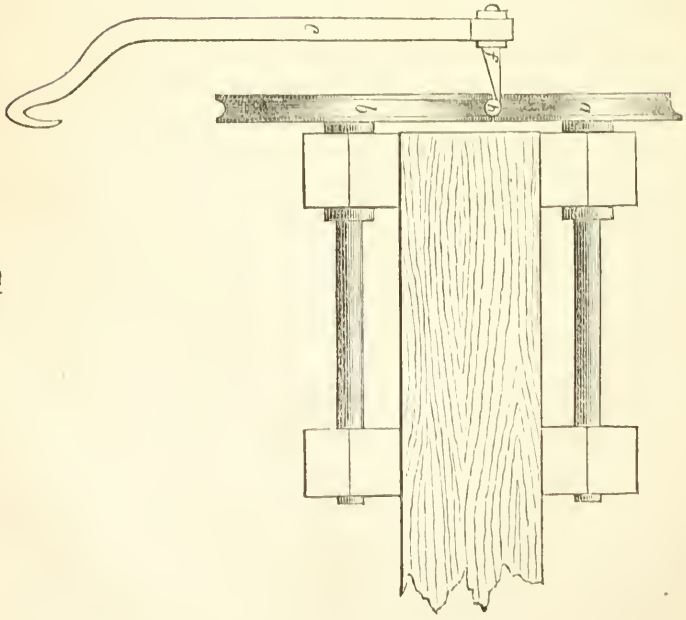

Fig. 3.

Fig. 2.

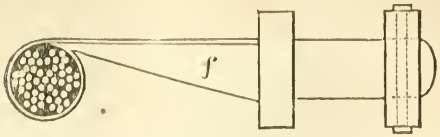

Fig. 4.

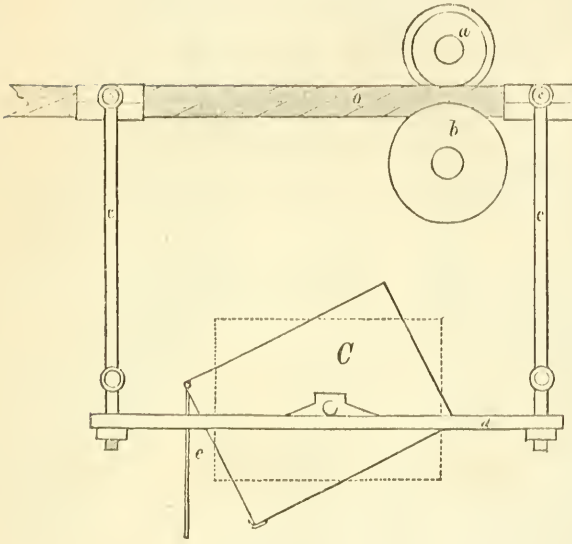

Fig. 5.

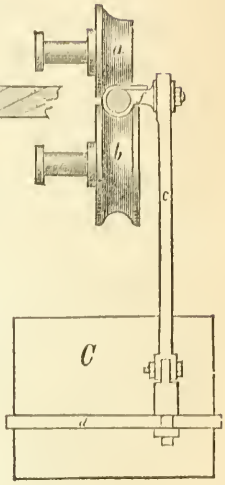

Fig. 6.

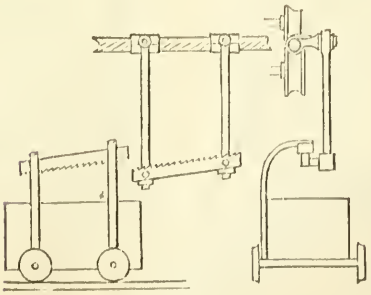

Fig. 9.

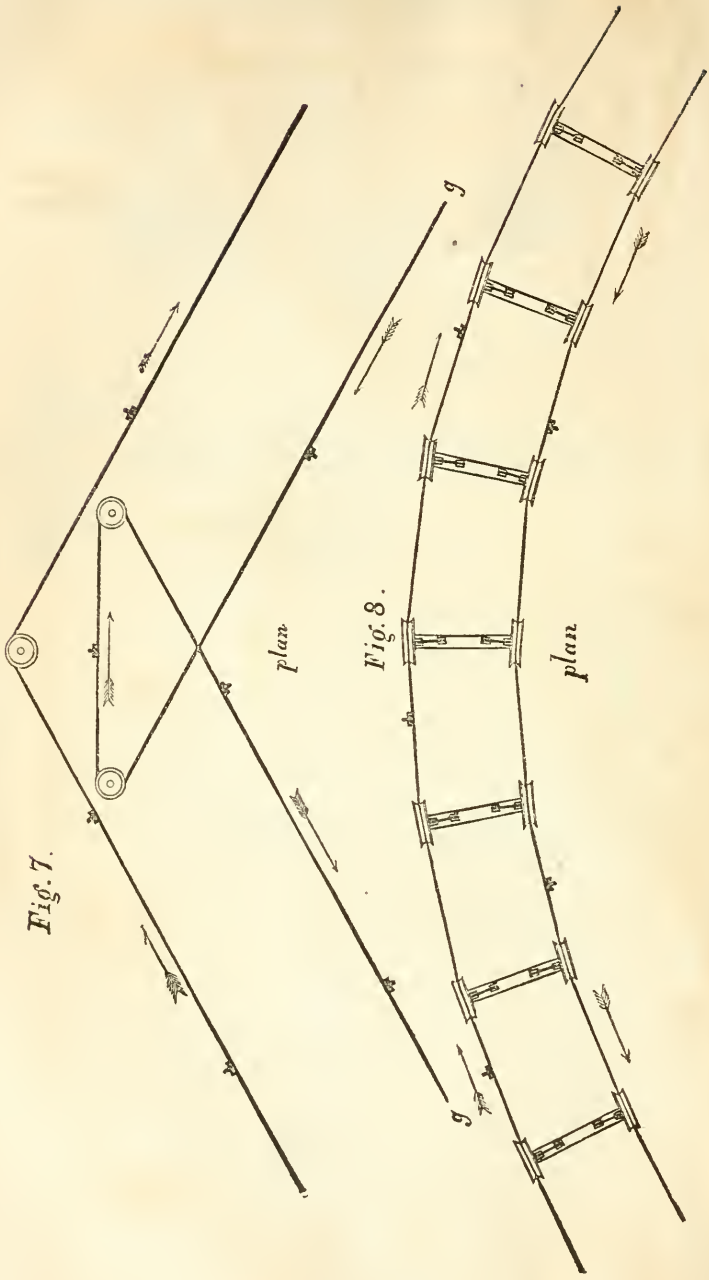
Fig. 7.
plan
Fig. 8.
g
g
plan

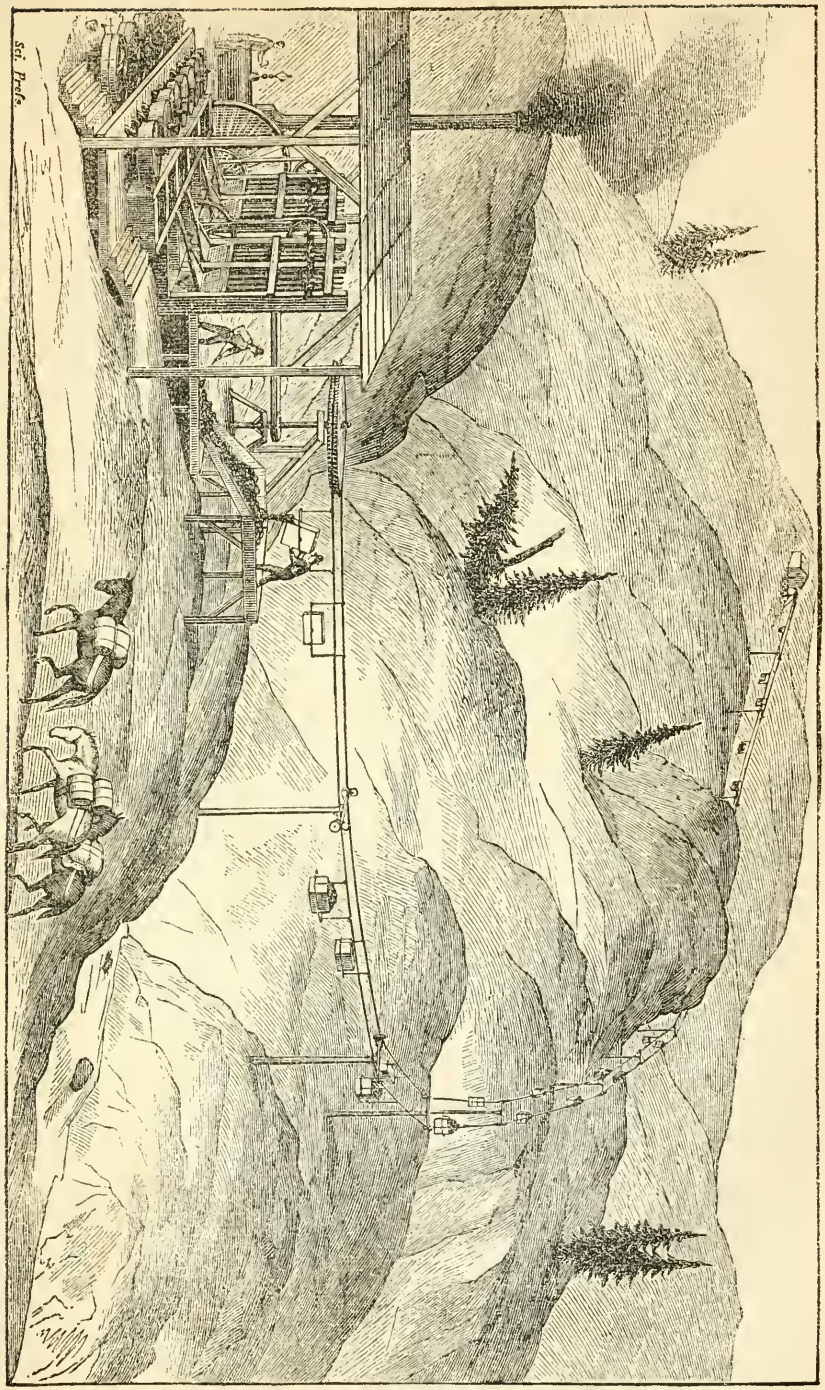

Fig. 10. General view of Hallidie's Endless Ropeway.

THIRD DEPARTMENT.

HARNESS MANUFACTURE.

STATEMENT OF J. E. PARKER, OF SACRAMENTO.

To the Committee on Gold Medals for eighteen hundred and seventy-one:

GENTLEMEN: The exhibition for which I claim the gold medal offered by the State Agricultural Society for the most meritorious display, was made in the third department, and consisted of one set of double carriage harness; one set single carriage harness; one set double team harness; five gentlemen's saddles, and one lady's saddle; also, a number of riding bridles. I do not claim the medal on the ground of a large or extensive exhibition—not considering this necessary to entitle me to merit, but my exhibition was made up of samples of the kind and quality of the work I am constantly turning out of my shop.

I believe, and have no doubt the committee will agree with me, that there is merit in quality as well as quantity. This is the principle upon which I work, and I find it to lead to success in the general actual business transactions of life, and more especially in the manufacturing business, and why not in competing for premiums and gold medals? By adhering closely to this idea I have secured a custom among men—consumers of my line of articles—who think the same as I do. Hence, a very large proportion of my work is what is called in the trade as "fine work," for which I receive the highest prices. My single harness are generally made to order at from thirty to one hundred and thirty dollars each. The same may be said of my double carriage harness, which I sell at from fifty to one hundred and seventy-five dollars per pair.

I opened a shop of my own in eighteen hundred and sixty-four, and since that time have turned out, on an average, about eight thousand dollars worth per annum. I have made it a rule to use all the California made leather in my work, when I could get it suitable for the purpose, and I will here say, to the credit of our California tanneries, that their leather commands the highest price in all the leather markets of the world, and is really a superior article for all purposes for which leather is used.

My object has uniformly been to encourage California industry, and California labor, and by adhering to this object strictly, I have been the means of doing my adopted State and her citizens at least some good. By this course, even in my humble way, many a dollar and many thousands of dollars have been kept within our borders and circulated among an industrious class of citizens and farmers, thus encouraging immigration to the State by the most practical way in the world—giving constant and reliable employment to those already among us.

I might mention here, that since my commencement in business I have been a most constant exhibitor at the Fairs of the State Society, and as my exhibitions have been meritorious, they have always received premiums. The premiums awarded me at the late Fair were the first and highest given for the articles exhibited.

Trusting that my exhibition will receive the favorable consideration of this committee,

I am, very respectfully, J. E. PARKER.

AMERICAN SILKS.

Statement of Tobin, Davisson & Co., of San Francisco.

I. N. Hoag, Esq., *Corresponding Secretary, Sacramento:*

Dear Sir: We beg leave to call the attention of your Board of Directors to the late exhibition made by us of Messrs. Cheney Bros' American dress silks, and to ask you to place the goods among the list of those for which you grant gold medals, provided you feel that you can consistently do so.

The development of this particular interest is one of great importance to this country, employing, as it necessarily does, a large amount of capital and labor, skilled and otherwise, besides keeping in the country millions of money which, in the absence of such industries, would be sent away to enrich foreign manufacturers. We submit, therefore, that anything that can be done to stimulate and encourage such enterprises should be done.

Hoping you will give the matter your careful consideration, we are,

Respectfully, TOBIN, DAVISSON & CO.

SILK CULTURE AND MANUFACTURE.

Statement of Joseph Neumann, of San José.

To the Committee on Award of Gold Medals:

Gentlemen: The merits upon which my claim for the gold medal is based are as follows:

First—In the third department all the silks I had on exhibition were of California production and the work of my own family. The articles on exhibition by my competitors were of foreign material and not manufactured in this State. Especially must I mention the showcase of sewing silk exhibited by the San Francisco Silk Manufacturing Company were not of their own make, but manufactured at Patterson, New Jersey. My exhibition in this department was one of the most meritorious, so was the expression of all the visitors.

Second—In the fifth department my exhibit of silk culture, from the eggs to the raw silk, was one of the most practical, and although the cash premium on the same has not been awarded to me, yet the general expression was that mine was the most practical in that line. Hoping that your honorable body will take the same view and award me the gold medals in the third and fourth departments, I remain,

Yours, most respectfully, JOSEPH NEUMANN.

EXHIBITION OF REELED SILK.

STATEMENT OF ED. MULLER, OF NEVADA.

To the Gold Medal Committee:

The undersigned submits the following as his reasons why his exhibit of silk at the State Fair of eighteen hundred and seventy-one should be honored with a gold medal. The producer, in my opinion, should also be a reeler of silk. The two departments of labor can be conducted by the same family with good advantage. As soon as the cocoons are produced and gathered they may be put into the water while the moth is still alive and reeled. This adds the labor and value to the product before it is put into the market. It furnishes labor to the country people. If the cocoons are put into the market before being reeled the profits of the reeling goes to the manufacturer, and the labor is performed in the city instead of the country, where the expense of living is greater than in the country, and consequently the expense of the silk itself will be increased.

Silk culture is one of those kinds of business that is most successful and most profitable when conducted in a small way in the family as an adjunct to other farming operations, rather than as a large and exclusive operation. It is one of the best and most appropriate occupations for children. It teaches them to notice and study the operations of nature; to acquire habits of thought and observation. It begets habits of industry and thrift, and accustoms them to feel the responsibility and care of something especially committed to their charge. The reeling of the silk is especially well adapted to the girls of the family. The work is light and easy, but requires the strictest attention and care, and is consequently one of the best of schools for both mind and body.

If all our people in the mountain districts would plant a few mulberry trees and raise a few cocoons each year, they would soon learn that it is one of the most pleasing and profitable of occupations they can engage in. I have taken the lead in this industry in the County of Nevada, and through my persuasion and efforts many families are more or less interested in it. We have now in the county hundreds of thousands of mulberry trees cultivated with direct reference to silk culture, nearly all of which have been planted at my instance or suggestion. A number of those who planted their trees but two or three years since, have already been greatly benefited by it. I have also taken a great deal of pains to teach the children the art of reeling the silk from the cocoon, and to inculcate the idea that the reeling should go hand in hand with the production. This fact, taken in connection with my small exhibition of reeled silk, gives to it an interest and merit which alone it would not possess, and upon this fact I base my claim in a great degree to the medal of the third department.

Others may have had more showy and more extensive exhibitions, but the circumstances connected with such exhibitions add to them no special interest or merit, except such as are usually attached to ordinary manufacturing operations of the factories of the towns or cities, while my exhibition of reeled silk indicates the beginning of an industry that if properly encouraged by the State Agricultural Society, and other local industrial societies throughout the State, will ere long do much to induce the poor people of those towns and cities to seek healthful and

remunerative employment in the country. The great evil of modern civilization is the concentration of population in the towns and cities, and he who introduces an industry, the tendency and operation of which is to counteract the centralization of population and to cultivate habits of industry, is certainly entitled to some degree of merit. In view of my efforts in this direction, which have been attended with a good degree of success, I think I am at least entitled to some consideration in connection with the gold medal.

Respectfully, ED. MULLER.

FOURTH DEPARTMENT.

PIANOS.

STATEMENT OF L. K. HAMMER, OF SACRAMENTO.

To the Committee to award the Gold Medals for the State Agricultural Society for eighteen hundred and seventy-one:

GENTLEMEN: At your request I have the honor to make the following statements:

As agent of Chickering & Sons, I exhibited in the fourth department pianos manufactured by them, as follows:

One grand piano;

One square grand piano;

One parlor square piano.

There were three other exhibitions of pianos, manufactured by as many different houses, and in order that an unbiassed and perfectly fair committee might be selected to pass upon the relative merits of the musical instruments so exhibited, each exhibitor selected one member to compose the regular awarding committee. This committee, after a careful examination and test of the instruments, awarded to each one exhibited by me the first premium. As this committee was composed of very competent gentlemen, their decision will undoubtedly be regarded as conclusive as to the relative merits of the exhibitions of musical instruments.

This question settled, the contest for merit lies between the exhibition made by myself and others of an entirely different character, but classed in the same department, such as ordinary cabinetware, woodenware, worked metals, chemicals, glass, crockery, stoneware, etc.

In comparing the workmanship on the Chickering pianos with that on the ordinary cabinetware, such as bureaus, bedsteads, etc., there certainly can be but one opinion, and that in favor of the pianos, even so far as the strictly cabinet part of the instruments are concerned. But when we take into consideration the great perfection to which the action or musical portion of the piano has been brought, the evidences of great mechanical ingenuity and merit of the very highest order are more perfect and convincing than in any other mechanical work yet made by human hands. It is proper here to state that the Chickerings

are not only manufacturers, but by their discoveries and improvements of the piano they have contributed more to the perfection of that instrument than all other American manufacturers combined.

One of the Chickerings is the inventor and patentee of the iron frame used in all the first-class pianos now made. For this invention he was awarded a first-class medal at the World's Fair at London, in eighteen hundred and fifty-three, and since that time some ninety medals from State and National Fairs in all parts of the world. For this he was also awarded a gold medal by the jury of the Universal Exposition at Paris, in eighteen hundred and sixty-seven, to which the Emperor, as an evidence of his special and personal approval, added the high distinction of the Legion of Honor. Mr. Chickering is also the inventor of the circular scale now so generally used, and which has contributed so much to the perfection of the piano; besides, many other less prominent improvements have been made by him.

The faculty of music is the most noble of the human soul. This faculty, well cultivated, brings into exercise the most exalting and most divine-like attributes of an individual, and renders him more happy and contented, and better fits him to discharge the many social and domestic duties he owes to those that by chance or choice he may be surrounded with. As with an individual so with mankind generally and with communities and nations. Hence the wisest statesmen and most enlightened educators recommend that in the education of youth, music be by no means omitted, and in all the most approved systems of modern education, music, both vocal and instrumental, is as regularly taught as the art of reading and writing, and this fact is telling in the higher moral standing of the nations who have adopted this custom.

No man or association of men has done more towards the musical education of the people of the United States in the last fifty years than have the brothers Chickering. With greater reason we may apply the same remark to the youth and people of our own State, California.

The factory for the manufacture of the Chickering pianos is the oldest, as it is the most successful, in America, having been established in eighteen hundred and twenty-three, and has been steadily increasing in capacity and in the number of instruments manufactured since that time. It now gives constant employment to over four hundred men, and thus furnishes the means of a good living to over two thousand persons. It turns out now over three thousand instruments per annum, of a value of over one million of dollars. Of this large number California receives her full share, one hundred and forty having already been sent to this State during the present year. This partiality of the people of California for the Chickering piano may well be considered as one of the best evidences of their genuine merit, for no people are more capable of a correct and discriminating judgment in regard to such matters, and none more distinguished for a universal disposition to own none but the best.

Having full faith in the superior merit of my exhibition, and full confidence in the integrity and good judgment of the committee, I submit the above statement and my claims to the gold medal for the fourth department.

L. K. HAMMER,
Agent for Chickering & Sons.

ARCTIC SALVE.

Statement of Nicholas Lumsden.

To the Committee on Chemicals:

Gentlemen: I claim a gold medal for my great Arctic Salve, because it is a California discovery, and patented. It is a sovereign remedy, and has never yet failed to cure when the directions were followed. Here in Sacramento it has been tested by men and women. Leading papers of Europe and America acknowledge it. Doctors, as great as the world has seen, recommend it, and say it is what is wanted.

Please consider the merits of my salve, and I will abide by your decision.

Yours truly,

NICHOLAS LUMSDEN, Proprietor.

MUSICAL INSTRUMENTS.

Statement of John F. Cooper.

To the Honorable Committee on Gold Medals:

Gentlemen: As the gold medal is offered for the most meritorious display in the fourth department, I would petition for it on my fine display of musical instruments, consisting of seven, all constructed on new and improved principles, of fine tone and especially adapted for our California climate, on the point of durability and compactness.

The Committee on Special Premiums have seen proper to award me a diploma for the most meritorious exhibit and a silver medal for the Mathusheh Colibri, for great power and sweetness of tone, in a small compass. A special premium was awarded for the Derrick & Felgemaker organ, and special for the Reddington cabinet pipe organ, and special for silver flute; besides, the committee made special mention for meritorious exhibit.

Hoping your committee may look upon this application for the gold medal with favor,

I remain, yours very respectfully, JOHN F. COOPER.

BILLIARD TABLES.

Statement of Jacob Strahle & Co., of San Francisco.

In addition to the premiums awarded to us, which are certainly by themselves a very flattering reward, we would most respectfully suggest that an acknowledgement of our claim to the gold medal of our department would be a justice. We claim that no other industry in our line employs more hands, and benefits the country more than we do; all the material used is of California growth or production; woods, iron, var-

nishes, etc., are all of our State. Such establishments are few, as the capital invested in the various branches of our business is over one hundred thousand dollars.

These houses are a credit to our State, and as such ought to be encouraged by the eminent men who are at the head of the State Agricultural Society, and who desire the prosperity of our State. The samples exhibited by us at the last State Fair, comprised: one new style Grecian curved billiard table with four legs, made of California woods, the carving alone cost four hundred dollars, the design of said table being of our own invention, and the first of the kind ever made; a new style cue rack, of Corinthian style, richly carved, combining cue rack, pool board, and marker—the whole of California laurel, and birdseye redwood; one set chamber furniture, of California birdseye redwood and laurel; one center table, inlaid with all kinds of California woods; ladies' work boxes, and a richly inlaid floor to match the billiard table.

We would then solicit a fair consideration for our claim from the commitee of awards, and would be greatly honored by receiving the fourth department gold medal, for the best California made billiard table with the Delaney's patent wire cushion attached (a California invention.)

Hoping you will favor our claim, we shall rest certain that justice will be done to whom justice is due.

We remain your most obedient servants,

JACOB STRAHLE & CO.

WOODENWARE.

STATEMENT OF NICHOLS, FALVEY & CO., OF SACRAMENTO.

To the Gold Medal Committee:

GENTLEMEN: We submit our claims for the gold medal in the fourth department for our display of woodenware, pails, tubs, etc., to your consideration, and think we are entitled to it for the following reasons: That our productions are entirely of home manufacture; that it requires a large outlay of capital to produce them; and that by their production here it prevents the importation of these goods and serves to keep in the country much money that otherwise would be sent out of it. The business here is still in its infancy, although nearly double what it was for the previous year, with a prospect of a far greater increase for the year to come. The quantity of these goods used annually on this coast is estimated at from three to four hundred thousand dollars, and from one third to one half of which is still imported from the Eastern States, that being less by far than for the years previous to our starting the manufacture here, and the prospect is good for entirely stopping the importation in a short time.

Hoping that your committee may think favorable of our claims, we remain, gentlemen,

Yours very truly, NICHOLS, FALVEY & CO.

POTTERY AND STONEWARE.

Statement of N. Clark & Co., of Sacramento.

Sacramento, October 28, 1871.

To the Committee on Gold Medals:

Being exhibitors in the late State Fair, we herewith present our claims to the gold medal to be awarded in the fourth department. By reference to our entry you will see our exhibit consisted of pottery of various kinds—stoneware, firebrick, flooring tile, sewer pipe, and drain tile. But few are aware of the difficulties that potteries have had to labor under on this coast, as wages and material have been high, and our losses in not being acquainted with the nature of our clays have been much greater than in countries where potteries have been long established. In old established potteries the present workmen have the benefit and knowledge of perhaps several generations. Not so with us. We must be tried in the furnace; and you will readily understand the nature of the furnace when we state to you that we have had fourteen potteries to fail in this State. Having large experience in different States and on different clays we did not for a moment believe the difficulties would be so great or lasting. Eight years ago we purchased our present works; we expected to lose fifteen per cent in burning, which is five per cent above the rate of old established potteries; this would leave us a margin for profit at the prices of goods. After four years of toil we find ourselves several thousand dollars worse off than when we began; instead of fifteen per cent we have been losing forty to sixty per cent, with a poor quality of goods. Our friends tried to induce us to abandon the business, as they had failed in the same undertaking; they offered us funds to engage in other business, but not to invest in pottery. Having no stockholders to tax we concluded to tax brains and muscle a little further, and never was the saying more true than "perseverance brings its reward." We are now manufacturing at as small loss, or perhaps smaller, than any other factory of the kind in the United States, while the quality of our goods, in the line of stoneware and sewer pipe, is equal to the best.

Our experiments in firebrick warrant us in saying that we have the material, when properly combined, to make firebrick equal to any imported.

We have the past season been experimenting with underground irrigation by means of earthen pipe laid under the ground, which promises to be of vast benefit to our State, while it can be used to advantage in any soil. It seems peculiarly adapted to adobe or clay soils that derive but little benefit from top irrigation on account of the surface baking.

The manufacture of terra cotta seems to offer inducements to capitalists. I believe that one hundred thousand dollars could be profitably employed in its manufacture on this coast. Our climate is well adapted to its varied uses; our wet and dry seasons operate against wood for architectural decorations, while iron is too heavy and costly. Experiments could be made at small cost; we have plenty of room and our furnaces would answer for experiments. We tender the use of them without cost to parties that wish to experiment in this line.

We give employment to seven hands directly, and indirectly to as many more, in chopping wood and digging and hauling clay. The present season we will consume two hundred tons of stone clay, two hundred tons of earthen clay, and four hundred cords of wood.

We feel that we are entitled to special consideration at your hands for the following reasons:

First—Perseverance under difficulties;

Second—We have succeeded where others failed;

Third—We were the first to improve the quality of stoneware;

Fourth—By establishing a house at San Francisco we have been able to stop the importation of this line of goods;

Fifth—We have been the first to make firebrick that would compare with the imported;

Sixth—We have been the first to introduce stone sewer pipe on the coast;

Seventh—We have been the first to introduce drain tile and use it as a means of underground irrigation. We claim by its use that it will not require more than one third the water that will be required on the surface; that adobe or clay soils will not bake from its use. By it we can apply our fertilizers in a liquid state, thereby preventing foul seed from getting in the land. It will increase the warmth in the soil, thereby bringing our vegetables earlier into market. The same pipe can also be used as a means of drainage in wet seasons. Its use will also in a great measure neutralize our alkaline soils, as during the rainy season the alkali is brought to the surface by moisture, the pipes draining the surplus water would readily carry off the alkali that is held in solution.

In conclusion, we would say we have had a hard struggle to establish ourselves in business. The prejudice of the people has been on one side, and the importers on the other. But, happily, we have overcome the difficulties, and while we have got on the bright side of business, we would be pleased, if you think our efforts are deserving, to have the bright side of one of the gold medals to look on to remind us that our efforts have been appreciated.

All of which is respectfully submitted.

N. CLARK & CO.

CABINET WARE.

STATEMENT OF JOHN BREUNER, OF SACRAMENTO.

To the Committee to award the gold medals offered by the State Agricultural Society for eighteen hundred and seventy-one:

GENTLEMEN: Having been an exhibitor at the late State Fair, and believing my exhibition to be worthy of the award of the gold medal in the fourth department, I submit for your consideration the following statement of facts: I have for seven years been a dealer in and manufacturer of furniture and cabinetware in this State, and for a number of years an exhibitor of such furniture at the State Fairs.

This year my exhibition consisted of the following articles of imported goods:

One rosewood inlaid bedstead.

One rosewood inlaid bureau.

One rosewood inlaid washstand.
One rosewood inlaid somino.
One walnut chill head bedstead.
One walnut dupease bureau.
One walnut somino.
One walnut bedstead represt wardrobe.
One rosewood cylinder bookcase.
One extension sick chair.
Two steamer chairs.
One walnut extension table.
One walnut sideboard.
One walnut sofa, silk cover.
One walnut easy chair.
Four walnut parlor chairs.
One rosewood marble top center table.
One woven wire spring mattress.
One looking glass.
Of goods manufactured by myself, I exhibited:
One walnut chill head bedstead.
One walnut chill head bureau.
One walnut chill head washstand.
One walnut chill head somino.
One wardrobe heavy glass door.
Two embroidered work fancy chairs.
One sick entry chair.
One lady's secretary.
One double office desk, revolving shelves.
One walnut office chair, leather cover.
One walnut hat rack.
One walnut sofa, cover blue and white.
Two walnut easy chairs.
Four parlor chairs, walnut.
One walnut gilt high D. chair.
Two rosewood finish easy chairs.
Four rosewood finish parlor chairs.
One clipper lounge.

The cash value of the entire exhibition was over six thousand dollars, and the regular awarding committee awarded me nine first class premiums—more in number and more in cash value than was awarded to any other exhibitor in the same department. This fact of itself, it seems to me, should have a significance in the investigation of this committee, especially as the premiums were mostly awarded for articles of home manufacture.

While the average amount of business done by me per annum is about fifty thousand dollars, the amount or value of articles made in my own shop is about seven thousand dollars. I give regular employment to nine mechanics, from three dollars and fifty cents to four dollars per day. I have commenced this manufacturing business, not because I can with my present facilities make more money from the capital invested than I could from the same amount of capital continued in the importation of goods, but for the purpose of building up in time a business that shall keep at home some of the vast sums annually sent out of the State for imported goods.

It is estimated that the furniture annually imported into California from the Eastern States and other countries cannot be less in value than

two million five hundred thousand dollars, while there may be five hundred thousand dollars worth manufactured here. This great drain on our circulating medium to keep up the industries of other countries should and can be checked, if men of capital will study the interests of the laboring class among us, and devise ways and means for giving them constant and remunerative employment. From the experience I have had in my small way of manufacturing furniture, I am of the opinion that a large establishment with capital to operate with, so as to take advantage of circumstances, located in Sacramento, could be made to pay a handsome profit on all the money invested.

The freight on furniture is greater in proportion to the value of the goods than on most any other class of goods imported, on account of their great bulk.

Again, the average breakage and damage to fine furniture by being handled is very great; while all furniture comes in a more or less damaged state, and has to be overhauled and repaired at considerable extra expense before it can be sold. The change of climate has also a very damaging effect on furniture. For instance, furniture put up in a damp climate, like that of New York or Boston, will last a long time if used in the same climate; but if transported into a dry climate, like that of Sacramento or most parts of our State, it falls to pieces in a very few years.

The annual loss to the people of California on furniture from this cause alone is thousands of dollars, all of which might be saved if this furniture could be manufactured in the State, in the vicinity and climate in which it is used. Had I the capital to invest, I would manufacture all the furniture I sell; but being unable to do this, I claim no less merit should be awarded me, because I have demonstrated that it can be done, and I am endeavoring to induce capitalists to put their money into a joint stock company against my knowledge and skill in the business.

With these remarks I leave the matter in the hands of the committee.

JOHN BREUNER.

CANDLES.

STATEMENT OF WINTER, MAURER & CO., OF SAN FRANCISCO.

To the Gold Medal Committee:

GENTLEMEN: We desire to call your attention to the importance and extent to which the branch of domestic manufactories which we represent affects the trade and industrial manufacture of California:

First—The importation of candles in boxes, as per official records, amounts to three hundred thousand boxes, valued at over one million dollars.

Second—Tallow, heretofore exported, did not realize to shippers over six to seven cents per pound net, while now, since our factory commenced operations, it is sold here at a ready market at ten cents per pound.

Third—To furnish our factory with tallow requires not less than the fat of thirty thousand head of cattle annually; the price obtained for tallow offers a great inducement to farmers and stock raisers to increase

their stock and herds, which always tends toward the general prosperity of a State.

Fourth—The importation of candles and exportation of tallow employs but few persons, while the manufacture of candles and such other articles immediately connected with this branch of business employs a large number of hands, "exclusively white labor," whose wants create a market for all the requirements of life, and help develop kindred manufactories, such as box makers, coopers, plumbers, and gives also employment to foundries in its various branches who supply all kind of machinery, tools, etc.

Fifth—The amount of capital employed in business at present is one hundred and twenty-five thousand dollars, the profits on which are used in this State instead of being distributed in other States and cities.

Sixth—We are now engaged in building and have nearly finished building a soap factory of the largest dimensions, having not its equal on this coast. The Union Iron Works, H. I. Booth & Co., build for this establishment two kettles, holding eighty thousand pounds of soap each. When worked, which will be in a fortnight from now, we shall employ as many more hands as we do at present; besides, it will add greatly to other advantages heretofore pointed out.

Seventh—In about one month from now at the utmost we shall be in full working capacity, and propose to manufacture not less than about one half million of dollars worth of candles and soap annually, the capital of which will remain in this State and help towards furthering prosperity.

Gentlemen, we do not propose to point out any further the advantages this State will derive from any and all well conducted manufactories; they are, to such an intelligent body of men as you, sufficiently known, and in saying anything more we would be simply intruding upon your valuable time.

We beg to submit all these facts to your kind consideration, and remain with all due respect,

Your most obedient, WINTER, MAURER & CO.,
Proprietors of the Mission Candle Works.

Copartners—M. Morgenstan, Henry S. Winter, Fred. Maurer, Isador Lavenson.

SAN FRANCISCO, September 30th, 1871.

FIFTH DEPARTMENT.

GRAPE AND WINE CULTURE.

STATEMENT OF B. N. BUGBEY, OF FOLSOM.

To the Committee on Gold Medals for eighteen hundred and seventy-one:

GENTLEMEN: Having been an exhibitor in the fifth department of the

late State Fair, and believing myself justly entitled to the gold medal for the most meritorious exhibition in that department, I accept your invitation to place before you in writing the grounds upon which I base that belief. In this department were exhibited the following agricultural products:

First—The products of silk culture—cocoons, raw and reeled silks, eggs, etc.

Second—The various kinds of grains and their products, as wheat, barley, oats, corn, etc.

Third—The products of the dairy, as butter, cheese, etc.

Fourth—All kinds of vegetables and roots.

Fifth—Flowers and all floral displays.

Sixth—The products of the vineyard—wine, brandies, etc.

I suppose that the first question to be decided is, as to which of these several divisions or classes is entitled to the greatest merit, or in other words, which is working the greatest benefit to the State by developing her peculiar resources and material advantages. What are the peculiar resources and natural material advantages of California, considered with reference particularly to the production of the articles above enumerated?

That California is a great grain raising State there is no longer any question. Her plains, her swamp lands, and even her foothills, high up among the mountains, have all been proven by experience to be among the best grain producing sections of the world, when properly and skillfully cultivated. But that same experience has also demonstrated the fact that constant and exclusive cultivation of grain impoverishes the soil and must eventually work a great injury to the State. Again, nearly all the other States and Territories of the Union are well adapted to grain raising, and we cannot therefore look to them for a market for our surplus products of grains, nor are we any way sure of a continuous foreign market at remunerative prices.

As to vegetables and flowers, while we can excell in the production of these also, by their very nature we cannot to any extent become exporters, and by their production cannot expect therefore to make money as a State, or do more than to save it to the extent of the value of the home consumption.

The same may be said of the productions of the dairy. With this exception, however, that while we have a country well adapted to this industry, we are still, to our shame, importers of its products to a very great extent. This industry should be encouraged and fostered in every way possible, but not with any view to make our State to any extent an exporter of its products, for the same sources which now supply our wants, over and above our own production, will undoubtedly continue to supply themselves.

As to silk and wine, our State has undoubtedly not only peculiar, but as relates to any other State or Territory within the Union, almost exclusive advantages. We have a climate and soil well adapted to the prosecution of both of these valuable industries, and in their productions, as before intimated, we have not only no rivals within the Union, but the people of all the other States are consumers, and will be glad to become our best customers. Not only this, but we may reasonably entertain the belief that the markets of the world cannot be over supplied with either of these products, hence we may anticipate great benefits from their successful cultivation here.

Again, the production of silk and wine does not exhaust, but rather

fosters the fertility of the soil, and the longer any particular piece of land is devoted to their production the better are the realized results. Then, too, the vine and the mulberry tree flourish and do best in the foothills, on land which is the least value for most other agricultural products, and which would be of very expensive cultivation for such products. Hence, the successful development of these new industries in our State will bring into use and make valuable millions of acres of a class of land that can in no other way be rendered of but little value. To the exhibitors of these particular classes in this department then the meed of merit will doubtless be awarded, and while I would concede great merits to the pioneers and exhibitors in the silk industry, yet I think it will be admitted that sufficient has not been accomplished in silk culture to entitle the industry to rank before that of the cultivation of the vine and the manufacture of its products.

The benefits to the State from silk culture are mostly in anticipation, while those from vine culture and wine manufacture are in a fair state of realization. This advanced stage of the latter has been brought about by the foresight, enterprise, and perseverance of a few individuals.

The whole enterprise from the beginning was a doubtful experiment. First, it had to be proved that the grapes could be grown and the wine made. Second, a long established and deep seated taste for foreign wines had to be changed, and a taste for home made wines cultivated and established before a market could be found for the home production. This taste for foreign wines was backed by a strong prejudice in their favor, and this prejudice had also to be removed. This has been a work of no small magnitude, and none but those personally and directly interested in it can realize the difficulties and discouragements the pioneers in the business have had to meet and overcome. That they have boldly met and overcome most of the obstacles to success, I have no doubt the committee will concede, entitles the industry they have established to the highest position of merit in the department. If this position be granted then I ask the committee briefly to review the part your humble servant has acted in the accomplishment of this work.

In eighteen hundred and sixty-one, I purchased a piece of land in Salmon Falls Township, El Dorado County, upon which were then planted eight acres of vines. I gave to this place the name of "Natoma Vineyard," and since that time my best energies and all the capital I could command have been devoted to the industry. I have now one hundred and fifty-seven acres in vines, and for a number of years past I have made from grapes grown by myself, on my own land, on an average of from fifty thousand to sixty thousand gallons of wine per annum. Last year my product was sixty-six thousand gallons. During this entire time I have been constantly and carefully carrying on experiments, the object of which has been to determine: first, the varieties of grapes best adapted for making superior wines of the different kinds in California, and second, the best mode of treating those wines in this climate to secure the best results from any given variety.

For the double purpose of assisting my own judgment as to the success with which these experiments were being attended, and to establish a reputation and market for California wines in general, and my own in particular, I have taken a great deal of pains and spent a great deal of money in placing them on exhibition and competition with the wines of other producers at our own Mechanics' and State Fairs, and also exhibited them at the Universal Exhibition at Paris in eighteen hundred and sixty-seven.

As an evidence of the high approval with which my wines have uniformly met since eighteen hundred and sixty-three, I beg to refer the committee to the following certificate of the Secretary of that society:

ROOMS CALIFORNIA STATE BOARD OF AGRICULTURE,
SACRAMENTO, December 31st, 1870.

I hereby certify that the following premiums have been awarded by the California State Agricultural Society to B. N. Bugbey, Esq., of Folsom, Sacramento County, State of California:

Date.	Article.	Premium.
September, 1863.	Best red wine, two years old and over	First.
September, 1863.	Second best red wine, one year old and over	Second.
September, 1865.	Best one variety of grapes	First.
September, 1866.	Best wine, one year old, from foreign grapes	First.
September, 1866.	Best white wine, one year old	Special.
September, 1866.	Best red wine, one year old	Special.
September, 1866.	Best exhibit of wines from foreign grapes	First.
September, 1866.	Best exhibit of wines from native grapes	First.
September, 1866.	Best brandy, one year old	First.
September, 1866.	Best twenty-four pounds of raisins	First.
September, 1867.	Best claret wine from foreign grapes	First.
September, 1867.	Best exhibit of wines from foreign grapes	First.
September, 1867.	Best grape brandy, two years old	First.
September, 1867.	Best wines from Calalyac, Johannisberg, Reisling, and Orleans grapes	Special.
September, 1867.	Best one variety Tokay grapes	First.
September, 1867.	Best twenty-four pounds of raisins	First.
September, 1867.	Best exhibition in the Fifth Department	Gold medal.
September, 1868.	Best exhibition of foreign grapes	First.
September, 1868.	Best one variety grapes for dessert or table use	First.
September, 1868.	Best twenty-four pounds of raisins	First.
September, 1868.	Superior wine, three years old, from Italian and Burgundy grapes	First.
September, 1868.	Wines from Malaga and Muscat grapes	First.
September, 1868.	Wines from Black Malaga grapes	First.
September, 1868.	Best exhibit of wines from foreign grapes	First.
September, 1868.	Best brandy, two years old	First.
September, 1868.	Best exhibition in Fourth Department	Gold medal.
September, 1870.	Best still white wine, one year old	First.
September, 1870.	Muscatelle wine	Sp. diploma.
September, 1870.	Black Prince wine	Sp. diploma.
September, 1870.	Best sparkling wine, two years old	First.
September, 1870.	Best exhibition of wines from foreign grapes	First.
September, 1870.	Best exhibition in Fifth Department	Gold medal.

ROBERT BECK,
Secretary.

This year I was awarded by the State Society:

For best sparkling wine.....First premium.
For best exhibition of wine.....First premium.
For best and greatest variety of wine grapes.....First premium.

It is proper here to say, that by a very unfortunate mistake in the entry of my wines this year, the age of the different kinds was not marked on the bottles, and as a consequence they were excluded from competition with the wines of the same age and kinds exhibited by other parties.

Some members of your committee having served on the Wine Committee will be able to explain more fully the cause and effect of this mistake. Suffice it to say it was no fault of mine, and I would not have had it occurred for one thousand dollars. In all my exhibitions at the Mechanics' Institute my wines have been equally well and highly appreciated, having been awarded a number of premiums over all other competitors, and this year the gold medal in the class in which they were exhibited. They also received high commendation from the jury of the Universal Exhibition of Paris. In addition to having secured a large trade in our own State, I have agencies for the sale of my wines, champagnes, and brandies in Chicago, Buffalo, Albany (New York), New York City, Philadelphia, Washington (District Columbia), Hartford (Connecticut), Worcester, Springfield, and Boston (Massachusetts), Manchester (New Hampshire), Little Rock (Arkansas), St. Louis (Missouri), Council Bluffs; and previous to the disastrous fire at Folsom the past season, which destroyed a large portion of my stock, I was sending forward to all of these agencies large quantities to supply a rapidly increasing demand. As will be seen by reference to my exhibition this year I also manufacture wine brandy, in order more fully to economize the product of my vineyard.

BRANDY.

I commenced the manufacture of brandy in eighteen hundred and sixty-three, and have since that time averaged about four thousand gallons per annum. My product for eighteen hundred and seventy-one was eight thousand gallons. In eighteen hundred and sixty-eight my attention was called to an improved still for the manufacture of brandy, patented by ——— Johnston. Having satisfied myself that it was a good improvement, I built and set to work the first working still ever made under the patent. The venture proved a good to myself, and the introduction and general use of this still cannot fail to be of immense benefit to the vine interest and to the State. Whatever that benefit may be, it gives me no small degree of satisfaction that through my patronage as a vine grower it was first introduced and proved of value. By the use of this still the operator can by one operation clear the brandy of the fusil oil and acetic ether and retain all the natural aroma. The same quantity of grapes or other fruits will make twenty per cent more spirits than by the old process, with twenty-five per cent less expense.

CHAMPAGNE.

I commenced the manufacture of champagne in eighteen hundred and sixty-eight. By my first year's experiments in this business my losses were not less than twelve thousand dollars. My next year's operations were more successful, and though the experience was dearly bought I am now able to produce a good article of champagne with the same certainty that I can produce from a good article of a good variety of grapes a good article of still wine. My average product of champagne since eighteen hundred and sixty-eight has been about four thousand eight hundred cases or dozens per annum. This class of wine being so much more expensive than still wines, it will be seen that their manufacture and sale at home or shipment abroad brings a proportional greater benefit to the State and its industries than the manufacture of still wines.

In this class of wines I have no competition among the exhibitors and claimants of the gold medal, and this fact alone, I submit, should be sufficient to decide the question of merit and the medal.

RAISINS.

I also exhibited samples of raisins produced by me. Very soon after engaging in the cultivation of a vineyard I determined to learn by personal experience whether a good article of raisins could not be made in California. My experiments were crowned with perfect success. I succeeded in proving that California is capable of not only supplying the one hundred and eighty thousand dollars worth of raisins annually imported, but if her people were disposed to engage in the business with energy and spirit, they could soon supply the entire demand for the whole United States. The annual importation of the United States is valued at about one million two hundred thousand dollars. The success of my efforts proves conclusively that we have a soil and climate in the western slope of the Sierra Nevada Mountains most eminently adapted to the successful and profitable prosecution of this industry. All we want to secure this entire trade and this large amount of money annually is a proper degree of enterprise, perseverance, and cheap and reliable labor. If there is any merit in having been the pioneer in an industry promising such vast resulting advantages to our State, then I am entitled to that merit, and I have no doubt the committee will award it to me. I have made and marketed some ten thousand boxes of raisins in this State, receiving for them the highest market price. The only reason why I have not made this a principal branch of my business is, that my wine, champagne, and brandy manufactures, and the cultivation and extension of my vineyard, have taken all my time. Were I relieved from the care of these departments, I should engage immediately in the cultivation and manufacture of raisins.

The following is a list of the articles exhibited by me at the State Fair of eighteen hundred and seventy-one:

One dozen bottles of Muscatel wine, vintage of 1869;
One dozen bottles of White Frontingnac wine, vintage of 1869;
One dozen bottles of Gray Reisling wine, vintage of 1869;
One dozen bottles of Black Prince wine, vintage of 1869;
One dozen bottles of Alaconte wine, vintage of 1869;
One dozen bottles of Traurina wine, vintage of 1869;
One dozen bottles of White Reisling wine, vintage of 1869;
One dozen bottles of Johannisberg wine, vintage of 1869;
One dozen bottles of White Malaga wine, vintage of 1869;
One dozen bottles of Verdelho wine, vintage of 1869;
One dozen bottles of White Nice wine, vintage of 1869;
One dozen bottles of Pedro Exomenus wine, vintage of 1869;
One dozen bottles of Orleans wine, vintage of 1869;
One dozen bottles of White St. Peter's wine, vintage of 1869;
One dozen bottles of Royal Muscatine wine, vintage of 1869;
One dozen bottles of Chambertin wine, vintage of 1869;
One dozen bottles of Zinfindel wine, vintage of 1869;
One dozen bottles of Port wine, vintage of 1869;
One dozen bottles of Sparkling Muscatel wine, vintage of 1869;
One dozen bottles of Champagne wine, vintage of 1869;
One dozen bottles of brandy, vintage of 1868;

One dozen bottles of brandy, vintage of 1869;
One dozen bottles of Alacante wine, vintage of 1868;
One dozen bottles of Reisling wine, vintage of 1868;
One dozen bottles of Camberton wine, vintage of 1868;
One dozen bottles of Muscatel brandy, vintage of 1868;
One dozen bottles of Muscatel brandy, vintage of 1869;
One dozen bottles of Catalyn wine, vintage of 1867;
One dozen bottles of Alacante wine, vintage of 1868.

GRAPES.

Pedro Zomenes, Malaga Muscatella, Pineaux, Black Hamburg, Isabella, Chasselas de Fouslambleu, Blue Malvasia, Flaming Tokay, Catawba, Fih Zagos, Orleans, Johannesberg Reisling, Grizzly Frontigon, Black Zinfindel, Red Traurina, Pride of Paris, Cerian, White Palestine, White Muscat of Alexandria, Queen of Niee, Alicante.

RAISINS.

Twenty-five pounds of raisins.

All of which I respectfully submit, trusting your committee will award the medal to the most meritorious exhibition, whether that falls to me or not.

Yours, etc., B. N. BUGBEY.

WINE CULTURE.

Statement of J. R. Nickeson, of Lincoln.

To the Committee on Gold Medals:

Gentlemen: Having been an exhibitor in the fifth department, at the late Fair of the State Agricultural Society, I am also an applicant for the gold medal in that department. My exhibition embraced fifty-three separate and distinct samples of wine, and seven samples of brandy. Having a large vineyard, embracing over two hundred and fifty varieties of grapes, I have for several years back turned my attention to the manufacture of wine. My success in this direction has been such as to warrant the outlay of large sums of money in the way of wine cellar and other conveniences for carrying on the business on a large scale; and I have, within the last two years, put up one of the best wine cellars, if not the very best, in the State. The object of making so many varieties of wines is to test the qualities and value of different varieties of grapes for wine purposes. The object of exhibiting was to obtain the judgment of others upon these same questions, to assist me in my future operations. My exhibition this year was awarded five first premiums viz: For best white still wine, two years old, ten dollars; for best red still wine, two years old, ten dollars; for best red still wine one year old, ten dollars; for best claret wine, ten dollars; for best brandy, one year old, ten dollars; making more first premiums than were received by any other exhibitor of wines and brandies.

Respectfully, J. R. NICKESON.

WINE CULTURE.

STATEMENT OF ORLEANS HILL VINICULTURAL SOCIETY.

To the Gold Medal Committee for eighteen hundred and seventy-one:

GENTLEMEN: In presenting the grounds upon which the gold medal in the fifth department is claimed for the Orleans Hill Vinicultural Association, it will be necessary, to show to what degree of merit their exhibition is entitled, to give a brief history of their experiments in grape culture and wine manufacture, and something of the successful results to which these experiments have led.

The father of the President of this association is a successful wine manufacturer near Johannisberg, in Germany, and the son was born and bred to the business. Coming to California in an early day he soon formed an opinion that the soil and climate of many portions of the State were well adapted to grape growing and wine making, and early resolved to test the correctness of that opinion by experiments of his own conducting. In eighteen hundred and fifty-three he imported a large number of grape slips of different wine varieties, direct from Germany, and at once commenced their propagation and cultivation, near Sutter's Fort, in Sacramento County. In eighteen hundred and sixty he was awarded a diploma by the State Agricultural Society for the best sample of wine from foreign grapes. In the meantime, his experiments giving very satisfactory results, he had been examining the country for a favorable location for a vineyard, determined to put in practice, on a large scale, what he had to his own satisfaction demonstrated in a small way. In eighteen hundred and fifty-eight he selected the ground where the vineyards of the Orleans Hill Vinicultural Association are now located. In eighteen hundred and fifty-nine he removed all his vines to that place, planted them out, and commenced a vineyard in good earnest. In eighteen hundred and sixty the Secretary of the association located a piece of land adjoining that of the President, and also commenced a vineyard. Although not yet associated together for general business purposes, experiments for mutual benefit of both were then systematically commenced, to determine the best varieties of grapes to cultivate for wine purposes. Sixty different varieties were planted, cultivated, fruited, and experimented on, and as fast as one variety was rejected the vines of that variety were grafted with the variety giving the greatest promise. This weeding out process has been continued until, for wine purposes, the association, which was organized in eighteen hundred and sixty-nine, are now cultivating but two varieties—the "Orleans" and the "Reisling."

The object aimed at in all these experiments has been to produce light and heavy table wines of uniform quality, equal or superior to the best European brands, and the first point was to find the grapes best adapted to the soil and climate of California for that purpose. There is no merit in the production of a good wine by accident, merely because the circumstances happen to be favorable, nor will such accidental production build up for California a good and lasting reputation as a wine producing country. The man or association who, by a long series of experiments, learns the variety of grapes best for a superior and perfectly reliable and uniform quality of wine, contributes more to the permanent success of the wine industry in the State—even though he

makes but a hundred gallons a year—than does a hundred or a thousand men who cultivate their hundreds of varieties of grapes and annually make their hundreds of thousands of gallons of wine, one half of which will have finally to be sold for vinegar, and the other range all the way from poor to good, according to its accidental favorable or unfavorable treatment. While experimenting upon the kinds of grapes as above intimated, we have at the same time been as carefully and eagerly carrying on experiments in the manufacture of the wine, until we are now prepared to produce a good article of wine of the variety desired, providing we have good grapes, with the same certainty and uniformity as the miller produces good flour from good wheat.

If all other wine growers and wine makers had been equally careful, the reputation of California wines would have been very different from what they now are, and with one half the annual product the value of that product would have been at least doubled. The Orleans grape being a good thrifty grower and prolific bearer and late to mature, we plant this variety on the sunny exposures of the hills, and the Reisling being the reverse of these in their habits, they are planted on the north slopes of the same hills. The association own now eight hundred and fifty acres of land, situated in the foothills of the Coast Range of mountains, in Yolo County, of a soil of as favorable a chalky formation as that upon which are located the celebrated vineyards of Johannisberg. On a portion of this land they have ninety thousand vines of the two varieties above named, and are annually adding more. In the year eighteen hundred and sixty-nine the association produced twenty thousand gallons of wine, in eighteen hundred and seventy, eighty thousand gallons were made, and the present year they will make an equal quantity. They have never experienced any trouble to find a ready and remunerative market for all the wines produced, nor would they if the product were increased ten or a hundred fold. They have adopted and uniformly practice the plan of closed fermentation, and find it much better for our California climate. As a satisfactory test of their wines, the association have imported pure German wines, made by the father of the President of the association from the same varieties of grapes, and submitted them, with those of their own make, to disinterested good judges. The reports of these judges have uniformly been most favorable to the California product.

These wines have also been exhibited for competition at the Fairs of the Mechanics' Institute and the State Agricultural Society in eighteen hundred and seventy and eighteen hundred and seventy-one, and have received at both places most encouraging commendation, securing a greater number of first premiums compared to the number of kinds exhibited than the wines of any other exhibitor. If the committee award the gold medal in the fifth department to the exhibitor who has really contributed most by skillful experiment and successful results to the advancement of the wine industry of the State, then we think the Orleans Hill Vinicultural Association justly entitled to that award.

Respectfully,

JACOB KNAUTH, President.

Carl Strobel, Secretary.

SILK CULTURE.

STATEMENT OF ED. MULLER, OF NEVADA.

To the Gold Medal Committee:

GENTLEMEN: My exhibition in the fifth department was a representation of the silk business, from the silkworm eggs to the eggs again, showing cocoons hatching and feeding in every stage of growth to full size, and until they were spinning cocoons. Also showing the moths hatching from the cocoon, and laying the eggs again. In fact, I showed all the conditions of a cocoonery in full operation. My exhibition was but a small edition of my own cocoonery, as it has been shown in Nevada during each Summer for years past. The experiments conducted by myself and others for a term of years have demonstrated beyond a doubt that the foothills of the Sierra Nevadas are most admirably adapted to the cultivation of the mulberry tree and the feeding of the silkworm—to silk culture in all its parts. I regard it only as a matter of time to see our hills and mountain sides covered with mulberry plantations, and the silk industry prospering everywhere in that portion of our State in all its glory, employing thousands of people portions of the year in rearing the insect and other portions of the year in reeling the silk and preparing the same for the factory. There is no other industry in our State, in my humble opinion, that can be made so beneficial to our people and the State at the same time as silk culture. But to bring it up to this beneficial position something more than individual exertion is necessary. Our people are unaccustomed to the care and strict attention that the successful prosecution of this industry requires. They are ignorant of the first rudiments of its requirements, and not inclined to engage in new industries.

But the art of managing the business in all its stages is easily learned, and if the industrial societies and the State Legislature will give it the benefit of their fostering care it may in a few years be generally introduced. I would have no extravagant premiums given for the cultivation of trees, but I believe that a small premium offered by the State for each one hundred pounds of cocoons of good quality, or for each twenty-five pounds of reeled silk, would be a most judicious expenditure of some of the State's money. Such legislation would call attention to the industry and show that it had the approval of the State. Silk culture and wine culture flourish in the same counties and require the same conditions of soil and climate, and are both well adapted to the foothills. Wine culture has already obtained a firm footing and is past the necessity of State aid. Not so with silk culture. It needs encouragement, and will well repay that encouragement. I have done what I could during the last ten years to give this industry my countenance and encouragement in the county in which I live, and through my exertions this county—County of Nevada—stands foremost as a silk growing county in the State. In Nevada we do not consider it necessary or even advisable to put out large plantations of trees or build expensive buildings for cocooneries in order to enter upon the business successfully or profitably.

A few trees set out around the place as shade or ornamental trees will at the same time answer for furnishing the leaves for the worms. No better or more beautiful trees than the white mulberry or moretti

can be found for the purposes of shade or ornament. They have a luxuriant dark green foliage, are rapid growers, and can be trimmed or trained to any desired shape or form. They are among the cleanest trees we have, bring no offensive insect to breed in them or feed on their foliage, and shed no unpleasant green or other substances about the place like many other trees used for shade. Not only this, but they produce a great abundance of most excellent fruit, much of it being nearly equal to the blackberry for eating raw or for cooking purposes, and all being a good food for chickens and pigs. Ripening as this fruit does about the season of most varieties of cherries and early figs it will also be useful in keeping the wild cherry birds so well supplied with food in which they delight that the cherries and figs will be safe from their ravages.

But those who plant the mulberry for shade will find its greatest value to consist in its value for silk purposes. The day is not far distant when in this country, as in the countries in the south of Europe, the leaves of the mulberry tree will command in the market a regular and remunerative price. About every town there will be families who will make it a business to feed each year a small number of silkworms from the leaves they may be able to purchase from their more fortunate neighbors.

SIXTH DEPARTMENT.

FRUIT.

Statement of J. R. Nickeson, of Lincoln.

To the Committee on Gold Medals for eighteen hundred and seventy-one:

Gentlemen: As you require a statement of my claims to the gold medal in the department in which I exhibited, permit me to submit the following:

I exhibited in the sixth department as follows:

One hundred and twelve varieties of apples;

One hundred and forty varieties of grapes;

Forty-five varieties of pears;

Seven varieties of peaches;

Eight varieties of figs;

One variety of pomegranates, one of prunes, one of English walnuts, and one of almonds.

For the above exhibition the Committee on Fruit awarded the first premium for the "best general display of fruit, embracing the best and greatest number of varieties," and for which I received the sum of one hundred dollars. I could give the committee a full history of my experiments, successes, and losses since I embarked in the fruit business in this State; but, as I did this in full last year, I do not deem it necessary now. If the committee desire any more detailed statement, I most respectfully refer them to my last year's statement, on file in the Secretary's office.

All of which is most respectfully submitted.

J. R. NICKESON.

SEEDS.

STATEMENT OF D. L. PERKINS, OF EMMATON.

To the Committee on Gold Medals:

GENTLEMEN: The following claim for the gold medal for agricultural products by me is most respectfully submitted for your consideration:

Agriculture is one of the most important employments in the world, and in order to carry out its great importance it is necessary that in all of its workings everything should be of the best, not only in its workings, but also in the materials to be used to carry it on well and be of benefit to those engaged in it. Thence, in going into field culture it is of the greatest importance that everything of the seed kind should be of the best quality. I have now been for the past fourteen years engaged in the growing of seeds, for the purpose of giving to the public the best and purest kinds for their good and benefit in the vegetable department. What greater luxury can we have at our table than good choice vegetables of all kinds? In order to have these, great care and attention is required on the part of the grower to see that nothing but the best is put into the market. In carrying on this branch of agriculture, study is required in order to carry out all of its branches successfully.

Let us go over the past, and see what I have done: To nearly every country I have sent choice collections of California seeds. At the Paris Exposition my collection took the prize of the silver medal, although I had eighty-four competitors. This fact alone shows that my collection was appreciated by those who acted the part of Judges. And now comes Japan to this State. She has sent her young men to learn how we farm, and learn and judge of the difference of the two countries. Already I have shipped to their Government a large case of California grown seeds, as a present, and another installment of grain and seeds will soon follow through a private party. This is but the beginning of a great and important business. This I claim to be of invaluable importance to this State and to the country at large. And it is by the energy of individuals that these things are brought about and good results from them. I claim that it is the starting of an enterprise that gives life and tone to any business, and though small at first, it will gather such an impetus that no one can foresee its magnitude. Japan not only wants our grains and seeds, but already they are buying choice stock to send to their country, thus showing that they fully appreciate what they see when they come to view our Golden State.

Look at my record for the past fourteen years at the different Fairs. The result has been highly satisfactory, showing that what has been exhibited by me has always carried off the premiums, showing that the judges fully understood the difference between the fruits of different competitors. It has been impossible for me to fill orders for seeds for the past two years. It was not owing to my want of knowledge, but to the new plan to which I had selected to carry out the great business of seed growing. Dealers write to me very early in the season for me to fill their orders, so that if I should fail they can send East for them. The time was when they would not buy of me, but that prejudice has worn off, and they find that the seeds grown in California, by a competant and trustworthy grower, are better than the foreign seeds. Proba-

bly there is no State in the Union so well adapted in its soils and climate as California for the raising of seeds; they seem to hold their vitality longer than anywhere else. I have sent a great many seeds to different States, to parties sending for them, and in all cases they have always given the best of satisfaction, producing larger and finer vegetables than their own of the same variety. Thus we see how a business of this kind is acknowledged abroad; it is of great value to many of all ranks in life that are benefited through this channel of business.

It seems unnecessary for me to enlarge upon this subject. Unaided and alone, I have done all that a private individual could do to show to the world at large what California can do. My object in thus sending abroad our productions was to further the cause of immigration and agriculture, and to promote our future prosperity.

In view of what I have thus done, upon your kind judgment I rest my claim.

All of which is most respectfully submitted to your consideration.

DANIEL L. PERKINS.

SEVENTH DEPARTMENT.

WORKS IN MARBLE.

Statement of J. C. Devine & Brother, of Sacramento.

To the Committee on award of Gold Medals of the State Agricultural Society:

Gentlemen: In our department, on the merits of executing the finest and best pieces of sculpture in marble which were exhibited at the State Fair of the present year, held in this city, and as regards the same we submit:

First—That the exhibition of the same was attended by considerable cost and labor to us, our object being to have the fine arts of our State, as produced by hammer and chisel, fairly represented, and thus call for all honorable competition.

Second—We claim the gold medal for our beautiful display of marble work in mantelpieces, scrolls, and monuments—representing the best workmanship in that line of art ever exhibited at a State Fair in California—and as soon as our competitors learned that we had such pieces for exhibition, they concluded not to compete, so we were the only marble workers who made a display at the State Fair of eighteen hundred and seventy-one.

Third—In our department at the last State Fair, the two mantels were of native Vermont white marble, as fine in "texture" and as susceptible of as bright a polish or luster as any marble imported.

Fourth—We have also to say for information, that there has been discovered in our neighboring State, Nevada, an immense ledge of marble, specimens of which having been worked and polished by us, prove as

fine and as susceptible of as brilliant an exterior as the famous Italian statuary. The lode is situated at Pyramia Lake, and the discoverer is Mr. Reapheal, of Wadsworth.

Fifth—We would impress upon your minds, gentlemen, that in getting up one of the fine mantelpieces referred to, we went to very great expense, our aim being to exhibit something alike creditable to our glorious State and the Pacific coast. It is too costly an ornament to find a ready customer, as its price, fifteen hundred dollars, would be but a fair remuneration for our skill and labor.

All of which, gentlemen, we submit to your judgment and discretion.

J. C. DEVINE & BROTHER.

PAINTINGS.

STATEMENT OF D. H. WOODS, OF SACRAMENTO.

To the Gold Medal Committee:

GENTLEMEN: In answer to your request that I shall file a written statement of my claim to the gold medal for works of art, there is but little I can say with propriety. I hope the committee will not place a collection of copies from chromos and engravings on a par with original paintings. If they do, we may expect future exhibitions to be made up of copies only, it being much easier to remain in the studio and copy the productions of eminent artists, than to travel and make studies from nature.

Yours respectfully, D. H. WOODS.

SACRAMENTO, September 21st, 1871.

MR. I. N. HOAG:

DEAR SIR: In answer to your inquiry as to which of my pictures are original and which copies, I answer: That I have one cabinet portrait of the father of Mr. D. H. Haskell, of this city, which I copied from an ambrotype, the subject having died some years before. My portraits I make as follows: I make a photograph, from which I make the drawing, and then I do all the painting from life. The horses, Lodi and Cheatham, were drawn and painted from life. My cow was also drawn and painted from life. My landscapes I sketched from nature at the places they represent. My fruit I selected at the orchard of Mr. C. C. Reed, of Washington, Yolo County, and made my drawing and painting directly from the fruit. The sheep I have painted were first photographed by J. G. Brayton, Esquire, of Napa City. I will state that it has become the universal custom of portrait painters to first secure a photograph of their sitters. I know of no exceptions to this rule on this coast.

Very respectfully yours, D. H. WOODS.

P. S. In each case where I have not used the word "photograph," the picture was drawn and painted from nature. I enter one painted photograph. I made the photograph myself. D. H. W.

PAINTINGS.

Statement of Mrs. W. E. Brown, of Sacramento.

To the Committee on Gold Medals:

I desire to enter the pictures which I had on exhibition at the last annual Fair, for competition for the gold medal of the society. I claim the medal, first, on account of the number and variety of the pictures exhibited by me, embracing landscapes from original sketches; heads, in oil and water colors; foliage, in oil on porcelain; and fruit, in pastels; second, on the ground of their superior excellence.

Very respectfully,

MRS. WM. E. BROWN,
Corner Third and O streets.

PAINTINGS.

Statement of Oscar Kattschmidt, of San Francisco.

To the Committee on Gold Medals:

Gentlemen: It does not seem to me to be exactly in accordance with good taste for an artist to set forth the merits of his own art performances, especially in a contest for merit with the works of his brother artists. It would be much more agreeable to me to leave this matter of comparative merit entirely to the good taste and judgment of those who are especially designated to decide it, without comment. But as you require statements from all contestants for the gold medal, I suppose I will have to lay aside my own feelings in the matter and comply with the requirement.

First, then, I would remark that as the contest in the fine arts department lies principally between two classes of work, viz: ordinary work in marble, and paintings, I presume the committee will have no hesitation in determining which of these classes is entitled to be placed first in the scale of excellence or degree of merit. Had the artist in marble presented finely executed specimens, requiring the highest order of art in his class, such as historical or allegorical representations or statuary, and the painters had presented only such samples of their art as require the lowest order of skill, such as copies of other paintings, or specimens of portraits, then a different question would have been presented to the committee from the one raised by the facts of this exhibition. This question having been decided, as I am satisfied it will be, in favor of the paintings, the second question arises as to which artist in this class exhibited works requiring the highest order of art to represent or design and paint. This question can be easily determined by reference to the entry books of the Fair, or it was undoubtedly remarked by those members of the committee who examined the exhibitions of the different artists in the gallery.

The exhibition made by myself embraced all the following subjects: historical, allegorical, landscape, portraiture, and fruit, while, if I am not mistaken, the exhibition of none of the other artists embraced more

than the three latter, placing animal painting with portraiture, where it properly belongs.

Providing, then, that the execution of my pieces was only equal to that of my competitors, my exhibition, embracing a broader field and subjects of a higher order, must certainly be entitled to the greatest degree of merit; and I may be permitted, with propriety, here to state that the regular Committee on Fine Arts seem to have come to this conclusion, as they awarded me the premium of fifty dollars offered by the society for the best exhibition of paintings. It is also proper here to refer to the fact that in addition to oil paintings in all the above classes my exhibition embraced drawings in India ink and pictures in water colors, thus showing work in three distinct branches of art, while none of the other artists showed in more than one of these.

Now, as to execution, I will not speak either of the execution of my work or that of the others, as I do not feel at liberty to do so; but I will in general terms point out some of the characteristics of well executed works of art, and to some extent contrast them with the characteristics of poorly executed works, leaving the committee to determine the relative classification of the several exhibitions. In all historical, general, and allegorical paintings no artist can succeed unless in the first place he has a distinct and vivid conception of his subject and the light in which he wishes to represent it. He must then convey or transfer to the canvas his own conceptions, so that they may be seen and recognized by the average public with the same distinctness and vividness as he conceived them. The artist must not only understand and appreciate, or as it were *feel*, the character of his subject, but he must portray that character with living, acting, and almost speaking characteristics, and in doing so he should be able to bring to his aid all the effect of brilliant, fresh, and soft coloring, in accordance with the rules and laws of art, so as to produce a perfect ensemble. No person can become proficient in this class of paintings unless he possesses not only the historical knowledge necessary to illustrate his subject, but he must possess in addition the real feeling or inspiration of an artist, and be able, in a manner, to act over again the history of the times he attempts to portray. These requisites place the historical and allegorical above all other classes of paintings, and such works are entitled to higher merit than any other.

Then in regard to portrait paintings; the artist should not only throw into the picture the individual expression of his subject, but as much as possible a trace of his character as well. The execution should show a freeness and ease of expression, the portrait setting out from the background with a natural and lifelike appearance. The flesh tints should be preserved with a delicacy and clearness in all stages, from the deepest shadow to the highest lights, always preserving a true relation to the general tone of the ensemble. A portrait should be a thing of life if not of action.

As to landscape paintings, their great merit is to be found in their truth to nature, correctness of design, and naturalness in execution. Originality should be the key to merit, as it is comparatively easy to make a copy, but it requires skill to sketch and execute an original.

Having thus thrown out a few hints, I will allow the committee to determine how well my performances conform to the rules I recognize as binding.

All of which is respectfully submitted.

OSCAR KATTSCHMIDT.

REPORT OF GOLD MEDAL COMMITTEE FOR 1871.

To the President and Board of Directors of the State Agricultural Society, Sacramento, California:

Gentlemen: The undersigned, in the discharge of the duties assigned them of awarding the gold medals in the different departments of the State Fair, made, during its progress, a careful examination of all the articles and products exhibited. With a view to a more complete understanding of the case of each claimant, they invited a full written statement of the grounds upon which such claim was based, thereby gaining much information with regard to the practical value to the State of several important industries. The committee met, pursuant to adjournment, at the society's rooms in Sacramento, and after careful and deliberate reading of the papers there submitted, made the following awards:

Second Department—To E. Soule, of Sacramento, for home manufactured farm wagon, and wagon materials made from California grown locust timber.

Third Department—To Joseph Neumann, of San José, for home made silk goods from California raised cocoons.

Fourth Department—To Winter, Maurer & Co., of the Mission Candle Works, San Francisco, for home made candles.

Fifth Department—To Ed. Muller, of Nevada City, for exhibition of the silk business.

Sixth Department—To J. R. Nickeson, of Lincoln, Placer County, for exhibition of fruit.

Seventh Department—To J. C. Devine & Bro., of Sacramento, for sculpture and other work in marble.

The medal for the first department was not referred to this committee to award. In addition to the above, the committee recommended a gold medal for the Pacific Wood Preserving Company, of San Francisco.

In making their awards the committee have been governed by the following considerations:

First—The merit of the exhibits;

Second—The value to the State of the interest thus represented;

Third—The need of its encouragement.

Had the merits of the exhibit been alone considered, the awards would in some cases have been difficult.

SECOND DEPARTMENT.

In the second department there were ten contestants, viz:

E. Soule, of Sacramento, for home manufactured farm wagons, and wagon materials made from locust timber;

H. M. Bernard, Sacramento, for large and meritorious exhibit of carriages, wagons, carriage materials, etc., for which he has hitherto

received the gold medal of 1869, twenty first premiums—in all, sixty-three premiums, at different Fairs in the State;

William P. Ready, Sacramento, for two gangplows of different styles of manufacture—the Challenge Gangplow, invented by him and patented in 1861; a trotting buggy of his own invention; two farm wagons, and one self-sharpening cultivator;

A. L. Fish, agent, for Knowles' patent steam pump;

Michael Lumsden, for boot screwing machine;

George A. Lloyd, for a gopher trap;

C. B. Brown, self-generating gas burner;

Pneumatic Gas Company, for gas machine;

John F. Uhlhorn, for extension sidestick;

Pollard & Carvill, San Francisco, for Clarence coaches, wagons, and carriages.

THIRD DEPARTMENT.

In this class there were three contestants, viz:

Joseph Neumann, of San José, for home made silk goods, manufactured from California raised cocoons;

Tobin, Davisson & Co., of San Francisco, for exhibit of Cheney & Co's American silks;

J. E. Parker, for one set of double carriage harness, one set single carriage harness, one set double team harness, five gentlemen's saddles, and one lady's saddle; also, riding bridles, made of California tanned leather; which articles have been awarded premiums.

FOURTH DEPARTMENT.

In this there were seven contestants, viz:

L. K. Hammer, for Chickering & Sons Pianofortes; one grand piano; one parlor square piano; one square grand piano.

Nicholas Lumsden, for Great Arctic Salve.

Jacob Strahle & Co., San Francisco, for large and meritorious exhibit of new Grecian curved billiard table, with cue rack, pool board, and marker, all of California laurel and birdseye redwood; one set of chamber furniture; one center table, and set of workboxes of California woods.

John F. Cooper, for exhibit of a variety of musical instruments, seven in number, which have been awarded special premiums.

N. Clark & Co., San Francisco, for pottery and drain tile.

Nichols, Falvey & Co., for woodenware; pails, tubs, etc.

John Breuner, for furniture; one rosewood inlaid chamber set.

Winter, Maurer & Co., of the Mission Candle Works, San Francisco, for home made candles.

FIFTH DEPARTMENT.

B. N. Bugbey, for exhibit of wines and brandies of his own manufacture, from grapes grown by him on his own land, and which have received three gold medals, twenty-three first premiums, two special premiums, and a special diploma, at our State Fairs, since September, eighteen hundred and sixty-three.

D. L. Perkins, of Emmaton, Sherman Island, for California grown seeds, which have been awarded many premiums, both in this country and in Europe.

Orleans Hill Vinicultural Association, by their President and Secretary, for wines grown and manufactured by them.

J. R. Nickeson, Lincoln, Placer County, for fifty distinct samples of wine, and five of brandy, to which five first premiums were awarded.

Edward Muller, Nevada City, for the most meritorious exhibition of processes of silk cultivation and manufacture.

SIXTH DEPARTMENT.

In this department there were only two competitors, viz:

E. W. Garrett, for best exhibit of seedling fruits.

J. R. Nickeson, of Lincoln, Placer County, for largest collection and greatest variety of named fruits raised by him, viz: one hundred and twelve varieties apples; one hundred and forty varieties grapes; forty-five varieties pears; seven varieties peaches; eight varieties figs; one each of prunes, English walnuts, apples, and pomegranates.

To this exhibition the first premium was awarded.

SEVENTH DEPARTMENT.

In the seventh department there were four competitors, viz:

D. H. Woods, of Sacramento, for oil paintings from nature.

Mrs. W. E. Brown, of Sacramento, for exhibition of landscapes, heads, foliage, fruits, etc., executed by herself.

Oscar Kattschmidt, for oil paintings, India ink drawings, and water color pictures.

J. C. Devine, of Sacramento, for sculpture and other work in marble.

The committee also recommended a gold medal to the Wood Preserving Company, of San Francisco, believing that to increase the durability of timber is equivalent to an increase of supply, and is consequently a question of public economy. The *production* and *preservation* of timber is, in the opinion of the committee, a matter of vital importance to the State.

The committee experienced much embarrassment from the imperfect classification of the different exhibits. Thus in the same category were the exhibits of wines, brandies, and silk culture. The former purely manufactured articles, and the latter agricultural products, the committee being placed in the position to decide between the relative merits of agricultural and manufacturing skill, where in point of fact no relation exists. In such cases, where the exhibits were equally meritorious of their kind, the committee gave the award to the industry which in their opinion most needed encouragement. The committee would, therefore, most earnestly recommend that each of the great and leading industries of production and manufacture be so classified in future that only those of each kind shall come in competition.

As the objects of agriculture (including the minor culture of fruits, etc.), are to increase the quantity and improve the quality of plants and animals useful to man at the *least cost* and in the shortest time *without permanent deterioration of the soil*, your committee would further recommend that all exhibitors competing for premiums be required not only to give a detailed written statement of the *mode* of production but the *cost* of the same. In this way there would be collected at each Annual Fair a large amount of practical information of incalculable benefit to the agricultural and manufacturing interest of the State. Ever so merit-

orious an exhibit will contribute nothing to our industries if the cost of production, *including permanent deterioration*, is such as to make the thing produced unremunerative.

All of which is respectfullly submitted,

EZRA S. CARR,
A. T. DEWEY,
NEWTON BOOTH,
B. B. REDDING,
W. WADSWORTH,
E. G. WAITE,
Committee.

SPECIAL GOLD MEDAL.

At a meeting of the State Board of Agriculture a special gold medal was awarded to A. D. Maillard, for his superior horse "Monday."

AGRICULTURAL COLLEGES IN THE UNITED STATES.

Hon. I. N. Hoag, *Corresponding Secretary, etc.:*

Your request that I would furnish a statement of the working condition of the various agricultural colleges of the country at the present time, and the prospects of the agricultural department of the University of California, for your forthcoming volume, I cheerfully comply with. I have received the annual catalogues of nearly all of them, and the recent visit of General Horace Capron, late head of the Agricultural Bureau at Washington, who made a tour of inspection among them before leaving the country to introduce the best features of our agricultural progress among the Japanese, enables me to give you a summary of his personal examinations.

I will name them in what he considers the order of their excellence, taking the time since the organization and means employed fully into account.

Massachusetts Agricultural College, at Amherst, endowed by two thirds of the Congressional grant (the other third going to the Institute of Technology at Boston), one hundred and sixty-eight thousand dollars; gift of county, seventy-five thousand dollars; State of Massachusetts, one hundred and twenty thousand dollars; to which was added by the Legislature of last Winter one hundred and fifty thousand dollars, and from private individuals enough to make a productive fund of five hundred thousand dollars. Chartered April, eighteen hundred and sixty-three; opened to students in eighteen hundred and sixty-seven. January first, eighteen hundred and seventy-one, had one hundred and forty-seven students, of whom thirty were in the fourth or senior class. Two weeks ago the original twenty-seven who first entered received the honors of the institution. Its real estate is valued at one hundred and ninety-six thousand and five hundred dollars. Its live stock, vehicles, and implements, fifteen thousand dollars. Of this stock the herd book shows fourteen short horns, five Ayrshires, four Devons, and four Jerseys, twenty-seven grade cattle, twenty-seven Southdown sheep, nineteen swine of the Suffolk and Chester White breeds, and six horses.

Eighteen dollars a term is charged for tuition. The necessary annual expenses of students are from two hundred and fifty dollars to three hundred dollars. All the County and District Agricultural Societies of the State own scholarships in the institution, and send students approved by their own examiners, whose expenses are paid. A labor corps is established for the benefit of such students as desire to work their way through the college, and so important do the trustees find this feature that they recommend raising a fund for employing industrious students at a fair rate, without too strict regard to the remunerative value of their labor, that habits of industry and a spirit of

independence be fostered and encouraged, and because such students are most likely to become valuable members of the agricultural community. All students are required to labor two hours on alternate days with the skillful and intelligent superintendent of the farm. For all additional work they are paid twelve and a half cents per hour. It not unfrequently happens that the best student earns the most money.

What do they study at Amherst? The very first study of the first year is human anatomy and physiology, with chemical physics, commercial arithmetic, and bookkeeping.

They have lectures on agriculture, considered first as an art and in its relations to other pursuits, and are taught what education a man must have who would succeed in it. Then they begin to examine the subject of soils, their origin, nature, and varieties. Lectures through the term on the laws of health, and daily military drill, "the school of the soldier." The second term they begin chemistry, learn how soils are improved by chemical and mechanical means; the philosophy of drainage, irrigation and tillage; the chemistry of the improvement of metals, and their use in the arts. With this, instruction in elocution; vocal music and composition; also, military exercises in the "school of the company." With the third term closer habits of study and observation are formed. We have more lectures on agriculture, on sterility of soils, causes and remedies, rotation of crops. Now comes organic chemistry and laboratory instruction, the close practical imitation of Nature's great processes; daily recitations in algebra, geometry, and French, in elocution and reading. Infantry tactics are continued in the "schools of the company and battalion."

Three years more of orderly progression from this starting point of symmetrical, rational development of every faculty of body and mind, science and art moving hand in hand, every step made practical, ought to make a Massachusetts farmer every inch a man.

No sensible person can read the full curriculum of studies pursued, especially history, political economy, commercial and rural law, etc., and not be convinced of the immense advantages of the "new education" over the old as a preparation for citizenship.

The corps of instructors consist of eight full professors, with two assistants, a gardener, and farm superintendent. There are fourteen lecturers, men distinguished in special departments of science, as Professor Hitchcock, on Comparative Anatomy; George B. Emerson, on Arboriculture; James Law, on Diseases of Animals, etc., who regularly fill their appointed places in the course of study.

The Massachusetts Agricultural College owes much of its prosperity to a wise provision of its charter which gave a trustee to each county, and made the appointment one for life unless removed for cause. The representative of old Suffolk is Marshall P. Wilder; of Berkshire, Henry Colt; of Bristol, Nathan Denfee, who has at his own cost erected a magnificent conservatory upon the college grounds. Each county has given its best man and one distinguished for zeal and knowledge in these pursuits, and thus some of the evils which State institutions labor under are practically avoided. To show that a farm, vegetable garden, orchards, etc., are not serious drawbacks to the financial prosperity of agricultural colleges, even in their early beginnings, I append this item of the Amherst records for eighteen hundred and seventy-one:

Total credits of farm, including property inventoried January first, eighteen hundred and seventy-one, credit for labor performed in grazing,

and receipts for produce and live stock, nineteen thousand eight hundred and seventy-three dollars and nineteen cents.

Total debts of farm, including property inventoried January first, eighteen hundred and seventy, and all expenditures for live stock, labor, implements, repairs, and fertilizers, twenty-one thousand four hundred and nine dollars and sixty-nine cents.

Three hundred and eighty-three acres of the Amherst domain have been judiciously divided into farming ground, wood land, orchards, vineyards, reserve, vegetable and nursery gardens, botanic garden, ornamental grounds, and arborium. A generous citizen has donated ten thousand dollars for the care of the botanic garden. The model barn, capable of holding fifty head of cattle and horses, cost ten thousand dollars. The most expensive of the college buildings cost thirty thousand dollars; farm house, four thousand dollars.

So much for an institution which, throughout its course of study and by every appliance of instruction, emphasizes the truth that one of the most dignified and important of human employments is to feed and clothe the world, and strives to make the workman worthy of his work.

CORNELL UNIVERSITY,

Nobly endowed and wisely planned to meet the educational wants of all our leading industries, is likely ere long to rival Amherst in calling the most distinguished agriculturists into her service, and by perfecting a model farm, under the direction of Henry McCandler, late of the Royal Agricultural College of Scotland. The agricultural and mechanical operations at Cornell have been carried on mainly by students. They have done a large amount of under-draining and other substantial work during the present year, at the rate of ten cents per hour. As a class, the President reports the working students in the voluntary labor corps among the very best in the University.

Among the many prizes to undergraduates it is noticeable that the founder's prizes are, first, to the student of the Voluntary Labor Corps on Agriculture who, without neglecting other University duties, shall show himself most efficient, practically and scientifically, upon the University farm, fifty dollars; second in merit, twenty dollars; third, ten dollars; second, the same amounts to meritorious students who excel in the University workshops.

The President's prizes fully recognize agriculture, one of fifty dollars being offered for the best thesis or original investigation, fifty dollars for meritorious student in botany and horticulture, with several others of smaller value. The noble spirit of beneficence in which this industrial University was begotten is self-perpetuating; gifts to meet its varied and growing wants are pouring in; it needs only to be free and open to both sexes to be worthy of its position in the Empire State. Opened in eighteen hundred and sixty-eight; it numbers eight hundred students.

IOWA AGRICULTURAL COLLEGE,

Located at Ames, Storey County, was opened in eighteen hundred and sixty-nine to both sexes, with a well developed labor system for house and farm. All members are "laborers" during the afternoon, at prices ranging from five to ten cents per hour; has an excellent farm of six hundred and forty acres; tuition free. General Capron reports this as

one of the very best institutions founded on the Congressional grant, and far in advance of some who got a greater share of the lands.

KENTUCKY

Leads all the Southern and Southwestern States in industrial education. The Agricultural Department of her State University has a farm of four hundred and thirty-three acres, consisting of Ashland, the home of Henry Clay, and the adjoining estate of Woodlands. Every student is required to work two hours a day in the horticultural department without compensation. Those who wish to defray a part of their expenses by their labor can work four hours a day on the farm, or five hours in the shops, receiving from five to ten cents per hour. One hundred young men were enrolled on this labor corps in eighteen hundred and sixty-nine, many of them defraying all of their expenses. Of seven hundred and fifty-seven students in the University, three hundred and eighty-three were in the agricultural and mechanical departments.

ILLINOIS

Has a farm of a thousand acres to be developed principally as an experimental and stock farm; forty acres are set apart for gardens and nurseries. Labor classes have been organized. Sixty-two out of one hundred and ninety-six students have been enrolled in these. Young women have been admitted. One of the best movements of the University has been the establishment of Farmers' Institutes in different portions of the State, where practical questions are discussed and lectures given by the Agricultural Professors. The stock books already contain many valuable donations and specimens, and some of the best farmers and stock growers are on its managing Board.

MAINE

Is developing her farm of three hundred and seventy-three acres in the direction of horticulture, especially fruit growing. From one half to one fourth the expenses of the students have been defrayed by their employment in this work.

MINNESOTA

Is putting her best strength into her Industrial College. The President says: "It is no longer a small number of persons preparing for professional work who are demanding higher education, but a vast body of people, hitherto unknown to educators, thronging forward and clamoring to be taught how to do their work in the right way."

KANSAS

Has a well organized labor system, employing both sexes; carries on experimental and miniature farming, allotting portions of land to students. There are ninety-six young men, seventy-six young women, and thirty-seven classical students. Two of the Professors are ladies.

MICHIGAN

Had her Agricultural College established with a very effective manual

labor system, before the passage of the Congressional Act. The additional funds thence derived have been employed in buildings and other valuable improvements. It has averaged ninety students per annum since its opening. There are ten young ladies among its students this year. The President says: "Our students work willingly and well, and thus preserve both the habit of labor and the taste for it."

MARYLAND

Is doing nobly with her share of the grant; has this year one hundred and eighteen students; the expenses of sixty of these (tuition and room rent) is paid by the State.

MISSOURI.

Who has thus far not realized a dollar from the grant of Congress, started her Agricultural College in connection with the State University, bought a farm, organized a labor corps under the direction of the Agricultural Professor, hired a farm superintendent and horticulturist, and now asks the Legislature for one hundred thousand dollars with which to bring it up to the standard of her neighbors. "The agricultural farm must be made a model, representing the State of Missouri; it must be stocked and furnished, and sustained for a brief period, after which it will be self-supporting," say the Curators. The land is divided into fields, each designated by a particular name; careful experiments are made upon these, the results of which are published. Labor of students, paid for at the rate of ten to fifteen cents per hour. Grape growing and stock raising will be specialties, to which particular attention is given.

NEBRASKA

Has her agricultural building and faculty, but her farm is not yet developed. The Kansas plan will be fully carried out as her means become available.

WISCONSIN

Is rapidly developing her farm. Students are paid twelve cents per hour. Several acres are used as experimental grounds by the State Horticultural Society. An excellent report of farm operations is published annually. The Agricultural College is one of the departments of the State University. A noble edifice, costing fifty thousand dollars, has just been given by the State for the special accommodation of the young lady students.

NEW HAMPSHIRE

Has an excellent domain long known as the Conant Farm. Its former owner had cleared one hundred thousand dollars from it without deteriorating its value. The Agricultural College is a department of Dartmouth.

VERMONT

Created an Agricultural College in her State University at Burlington. The farm purchased last year has not yet been adapted to purposes of instruction.

NEW JERSEY

Has, through the work of her Agricultural College and the indefatigable Professor Cook, added greatly to our practical knowledge, especially in the direction of vegetable and fruit growing. Four of the agricultural students are from Japan.

CONNECTICUT

Made over her share of the grant to the Scientific Department of Yale College, adding the funds to those of the Sheffield Scientific School. This school substantially covers the ground of the Massachusetts Institute of Technology; they are the Mechanic Arts Colleges of their respective States. The Sheffield School has graduated twenty-seven; has at present twenty-five seniors, thirty-seven juniors, thirty-nine freshmen, twelve special students—one hundred and forty.

Without specifying further, it is enough to say that in almost every institution founded upon or receiving the benefits of the Congressional grant, the labor of the students is being used to develop the industrial departments. Michigan early adopted this system, and no student is excused from his daily three hours labor except for physical disability.

GENERAL REMARKS.

Briefly then, the Agricultural Colleges, without a notable exception, are meeting the reasonable expectations of the public. They flourish just in proportion to the prominence given them as integral parts of the system of public education. Where the Agricultural College is made a mere adjunct or appendage to a literary institution, students are few, undecided as to their pursuits, and led by sympathy away from the specific objects of agricultural training.

The Commissioner of Agriculture in his recent report says: "These institutions are destined to become a vital power in the land, and to wield an influence which colleges freighted with a curriculum of classical studies can never exert. Mistakes and misconceptions of the sphere of their highest utility will occur, but ultimately, when the grand idea of practical education shall be fully crystalized and their faculties be composed of young and vigorous men developed within these institutions and under the influence of higher progression in physical and practical science, their utility and beneficent influences will fully appear."

The admirable report of the Commissioner of Education is not less emphatic upon this subject: "Great and commendable as was this gift of Congress, had a wider knowledge of technical education prevailed, hundreds of thousands of dollars would have been saved to this great trust, and unspeakably greater results secured."

This resume of agricultural institutions for the year eighteen hundred and seventy-one would be incomplete without a mention of the Horticultural School for Women at Newton Center, Massachusetts. The culture of flowers, small fruits, and vegetables is practically taught, the students laboring the entire Summer from three to five hours daily, with a very marked gain both to physical health and intellectual vigor. Boston affords a market for the products of the garden and greenhouse, the receipts from which are already so large that the institution is expected ere long to become entirely self-supporting.

CALIFORNIA.

The Agricultural College of our University is in (prospective) occupation of a farm so admirably located and adapted by diversity of soil and exposure to various cultures, that by an organization of students' labor it may be improved with a moderate outlay of funds. Its course of theoretical instruction is well arranged, but theoretical instruction alone is not going to make farmers of our young men. It is for the State to decide whether she will lag behind all others in this respect. Whether the University lands shall remain for a long term of years an undeveloped site, suggestive of splendid possibilities, remains to be seen. The education of our youth in the interest of agriculture and the mechanic arts, the object of the Congressional grant, is to me the most vital of "labor questions." This ought to be secured with the least possible sacrifice of productive industry—a principle which Cornell University and several others apply in farm and workshop, with manifest economy of their funds.

While Minnesota is planting orchards, and Massachusetts growing complete sets of California trees and shrubs in their Agricultural College grounds, it is not surprising that the question is so often asked what our agricultural department is doing in a practical way. Local and private enterprises are being started for industrial education at other points, which may take the place of German real schools; but the University should lead, and not follow in everything which tends to develop, diversify, and enoble the industries of the State.

It is proposed that at the next session of Congress a committee be appointed to examine minutely the plan of organization, construction of buildings, management of grounds, and general working of all the institutions organized under the grant, with instructions to report to the next following Congress, for the information of the country and the benefit of similar institutions yet to be organized.

I trust such committee will not find the site of our Agricultural College unoccupied. An Agricultural College without a farm suitably arranged for illustration and experiment would be like a chemical school without a laboratory, or a mechanical school without tools and machinery.

Yours, very truly, EZRA S. CARR.

University of California, Oakland, October 2d, 1871.

TRAINING AND PRUNING GRAPE VINES.

BY I. N. HOAG.

There are many farmers who would plant vines and enter upon the business of grape culture to a greater or less extent but from the fact that they have obtained the idea that there is something very difficult and hard to learn or comprehend in the management of the vineyard. To such we would say, the best way to learn is to plant a few vines and become interested. Then what now seems so difficult will by degrees become simpler and easier.

It is true there are many different opinions as to the best mode of training and pruning vines with a view to obtain the best results. There are also many different practices based upon these opinions. From these differences of opinion and practice among professional viniculturists has doubtless arisen the prevailing idea above referred to as existing among our farmers.

With the grapevine, as with all other vines, trees, and plants, various modes of treatment are required, depending on the soil and climate, as also to some extent on the variety of grape and the purposes for which it is to be produced. The principles and reasons involved in the adaptation of crops, trees, and vines to soils and climates, and in the different modes of treatment by different circumstances, constitute the practical science of agriculture in its most general sense. To study and become familiar with science is the interest and duty of every person who proposes to follow agricultural pursuits as a means of livelihood. The performance of those things which this science requires to be done at the proper time and in a skillful manner, so as to produce desired results, constitutes the *art* of agriculture in the same general sense.

It is equally the interest and duty of every farmer to strive to become proficient in the *art* as well as learned in the *science* of agriculture. To accomplish these requires reading, thought, and practice combined. By reading we learn the result of the experiences of others. By thought and practice we apply the information thus obtained with intelligence for the accomplishment of our own desired objects. In the training and pruning and care of the vineyard science and art as above defined may be and require to be constantly brought into practice; then the whole thing becomes so simple that the operator wonders that he did not comprehend it before.

LOW TRAINING.

General experience in this State, where the atmosphere at night is so dry and pure as to induce a low degree of temperature in the Summer season as compared to that of the days, has proven that low training and pruning is the best. The grapes being close to the ground feel the influence of the heat absorbed during the day by the earth and given out during

the succeeding night, while those higher up are exposed to the greater extremes of the atmosphere. Hence, grapes near the ground or on low trained vines are found to ripen in the same vineyard in this State from ten days to two weeks earlier than the same varieties trained over trellises. It is also found that the former are fairer, larger, and more highly flavored than the latter.

Some claim that the mildew is not so apt to affect the grape grown on high trained vines, where the atmosphere circulates freely, as on those close to the ground. We think reason and experience are both in favor of the opposite opinion. Mildew on a growing plant is not induced by the same causes as mildew on dead and decaying matter. The extremes of heat and cold during the natural flow of the sap is believed to be one of the chief causes of mildew in the grapevine. As these extremes are greater at a distance above the ground, so the inducing causes of mildew are proportionately greater, and we find experience agrees with reason on the subject.

We think that the *time* of pruning has more to do with mildew on the grape than the manner, as we shall show hereafter. In accordance with the general experience of the best cultivators, we would recommend that vines be so trained and pruned as to form the head from one to two feet above the ground. The use of stakes may thus be entirely dispensed with, and quite an expense saved.

TIME OF PRUNING.

When the object is to induce a rapid growth of wood, as in young vines before they are of proper age to fruit, the pruning should be done in the Fall or fore part of Winter. If, however, it is desired to produce less wood and more fruit, the time of pruning should be delayed until later in the season. The time should also be governed by the soil to some extent. On elevated land and a dry soil, where the vine naturally forms but little wood and is inclined to bear too much fruit, pruning should be done early in the Fall after the leaves have fallen. Then when the sap starts in the Spring it will swell the buds with force, and send out strong canes and less fruit spurs.

On the contrary, vines growing on rich, alluvial soil, where too much wood and too little fruit is the natural rule, this tendency may be checked to a great extent by delaying the annual pruning until late in the Spring—even so late that the leaves on the canes are forming. By cutting back the canes of the past Summer's growth at this time, leaving but two or three buds near the base, these buds would then swell evenly and develop strong fruit spurs, and, as a general thing, the result would be a good quantity of well developed fruit stems and blossoms.

A FACT IMPORTANT IF GENERAL.

Here we would mention a fact which has come within our observation and experience, which, if generally true, is of some importance. It is this: that the third fruit bud from the base of the past year's cane throws out larger and better developed bunches of grapes than either the first or second. The grapes from these buds seem also better flavored, and generally superior to those on the first and second. In accordance with this hint we have adopted the plan of cutting the cane

at such length as to leave the third bud, generally, and sometimes the fourth, when a good strong one, and then rubbing off the first and second buds, and leaving the third and fourth for fruit.

The number of fruit buds left on any vine must depend on the age and strength of the vine. If the vines are strong and vigorous, at three years, from two to three bunches of grapes may be allowed to mature on each, without injury. The next year the number may be increased, and so on, increasing the quantity of fruit with the age of the vine.

Having completed the annual pruning, the next operation to be performed in the vineyard is the Spring cultivation. It requires some experience and judgment to determine when and how to cultivate the vineyard; for each locality and soil requires a treatment peculiar to itself. And the same vineyard requires a different treatment, depending on the purposes for which the grapes are to be used.

CULTIVATION ON DRY SOIL.

If your vines are on a dry soil, one that is not well calculated to retain the moisture well into the Summer months, then the cultivation should begin early and continue as long as any weed seed will sprout and grow. The cultivation of such should be deep and thorough. The ground should be finely and thoroughly pulverized from the depth of eight inches to a foot or sixteen inches—plowing both ways and close up to the vine. Care should be had that this plowing is done when the ground is in the proper condition, so that it will not break up into lumps and clods. After plowing each time a cultivator or one-horse harrow should follow, so as to keep the ground level and smooth on the surface. Such cultivation will insure a good crop of grapes for wine purposes on the driest soil in our State, even in our driest seasons. Of course we speak of vineyards of some age, say four years or over.

CULTIVATION ON MOIST SOILS.

Vineyards on our low, rich river bottoms require very different treatment; indeed, such cultivation as we have pointed out above given to vineyards along the banks of our rivers, where the soil is deep, damp, and rich, would most certainly render such vineyards nearly if not quite valueless. We have known many vineyards, on such lands and cultivated under such a thorough system of cultivation, to bring nothing but disappointment to their owners for years in succession. The vines grow luxuriantly, and each year put out an abundance of fruit spurs and blossoms, giving promise and hope of a large and valuable crop. But when the berries are about the size of bird shot, and from that up to the size of small peas, mildew makes its appearance on the leaves and grapes, and the more luxuriant the vine the more vigorous the spread and growth of the mildew. From the time the mildew makes its appearance the growth of the grape is checked, and when it should begin swelling the second time, instead of doing so it remains stationary or nearly so. Some of the bunches on the same vine will do much better than others, and some of the berries on the same bunch will grow to twice the size of others. Some make an effort to color, while others remain a dingy green.

Year after year we have seen the same thing occur, the owner each year making renewed effort to give his vines better treatment, *earlier* pruning and more *thorough cultivation*, and each year meeting with the

same unsatisfactory results, until at last, discouraged and disgusted, he digs up his vines and gives them to the flames. We have known quite a number of good vineyards thus destroyed.

PERSONAL EXPERIENCE.

Three years ago the writer came into possession of a vineyard on the Sacramento river bottom, on rich alluvial soil. Remembering what we had seen, we regarded this vineyard of but little importance; indeed, the first thing we did with it was to give about one half of the vines to a neighbor, provided he would dig them up and take them off the ground. He did so, but before he had transplanted them he also became discouraged in grape culture on such soil, and allowed the vines to die without resetting them.

Having a great amount of other farm work to do, the vineyard was not even pruned until the vines were green with young leaves, and the ground was thickly covered with weeds from three to four inches high. At this stage the vines were thoroughly pruned, leaving only from four to six fruit buds to each vine. The vineyard was then about seven years old. The fruit buds left on the vines, being near the base of the canes, had at the time of pruning swollen but little; those further towards the ends having robbed these of the necessary sap. The vines bled profusely for several days, but finally the bleeding ceased, and the buds began rapidly to expand and throw out leaves and fruit stems in the greatest abundance. As two horses and a large plow could not be worked among the vines, the ground was then plowed, as well as it could be, with a small plow and a single horse. It could only be plowed from two to three inches deep, just enough to cut the roots of the weeds and turn them bottom side up, or roots up.

After the rains had all passed for the season, and the weeds had got a good start once more, the vineyard was again plowed, in a similar manner, and then dragged or harrowed with a one-horse harrow, and left for the season. As soon as the fruit was set, all the suckers and young canes that had no fruit on were pulled off. No other Summer pruning was done, and no pinching off the ends of the canes. A quantity of sulphur was purchased to keep away the mildew; but as no mildew made its appearance, the sulphur was laid away for the next year. The next year the vineyard was treated in a similar manner, and with a similar result, and the sulphur is still on hand.

The average product of grapes for each of the two years was over *four tons per acre*, of the best quality of table grapes, of the California variety. The bunches were very large and compact, and the grapes large, fair, and uniform. None of the fruit was sunburnt in the least. The vines also bore and matured quite a quantity of second crop grapes.

In the same neighborhood and on similar soil other vineyards, early pruned and thoroughly and deeply plowed and cultivated, produced nothing but a scattering crop of half grown and half ripe grapes, together with an abundant crop of mildew on both grapes and leaves.

CAUSES OF MILDEW.

From the above experiments and their results, we think may be traced at least some of the causes of mildew on grapes. Where the vines are pruned early a superabundance of sap is forced into those portions of the vines not cut away. This produces a rapid and unnatural growth—

a growth of itself partaking of the nature of a fungus—and furnishing the most natural food for that fungus known as mildew. When to early pruning we add deep plowing and thorough cultivation of a rich and moist soil, we only increase the cause of mildew by forcing the vine to a more rapid mushroom growth. By late pruning we take from the vine a large quantity of sap, with the canes cut off, and also bleed the vine, and thus relieve it of the superabundance of sap which early pruning retains in it to force an unnatural growth and induce disease.

In other words, early pruning destroys the equilibrium between the wood of the vine and its food; while late pruning restores that equilibrium, or retains only the proper amount of food to sustain and keep up a natural growth of the vine which is left after pruning. Again: by allowing the weeds to grow in the early part of the season, we extract from the soil the unnecessary moisture and nutriment which exists naturally in our rich alluvial bottom lands. Thus in a degree we reduce the lands to the condition of the less rich and drier uplands on which the grape in California is never troubled with mildew or rot.

We believe the greatest cause of mildew is the presence of too much moisture *both in the air and in the soil.* In countries where rain is frequent during the growth and ripening of the grape, mildew is much more prevalent than in our State on our richest and most moist soils. In such countries the grape growers have to contend with both a damp atmosphere and soil, while we have but one, and that only in our low bottom lands.

DRAINING LOW LAND VINEYARDS.

Wherever vineyards on low lands are so situated that they can be thoroughly drained, either by open or covered drains or ditches, there is no doubt that much of the trouble of mildew can thus be got rid of. The system of allowing the weeds to grow we would only recommend as a temporary expedient. We believe that draining will accomplish the same result and has many advantages.

The vineyard can thus be kept looking well, while the growing weeds are an eyesore to any good farmer. Again: when the vineyard is once well drained the trouble is removed for years and perhaps for a lifetime.

SUMMER PRUNING.

There is a great diversity of opinion among vine growers in this country as to what amount of Summer pruning is best for the vineyard; also, as to the best time for doing this pruning. Some contend that cutting the vine back destroys the equilibrium between the vine and the roots—that it is contrary to nature and tends to weaken the vine and shorten its life. Others say that judicious pruning is indispensable to the production of good fruit, and that it is impossible to destroy the balance of power between the roots and top, because the growth of the roots is governed by the growth of the branches. It is not strange that there should be a diversity of opinion upon most all subjects connected with the culture of the vine, since our people have learned or had their experience under so many different circumstances.

Some of our vineyardists are from Germany, some from France, some from Italy, Spain, Portugal, some from the Eastern and some from the Western States. All who have had any experience in vine culture before engaging in the business in California have brought with them the notions and systems of culture of the country from which they came.

Those who have taken up the business here—and this class compose the greater number of vine growers of the State—have had their experiences under as many different circumstances as there are different localities and climates in the State. Hence we say it is not strange that there should be a great difference of opinion on most all subjects connected with the business, and this difference of opinion and practice is very striking in reference to Summer pruning.

The vine will produce fruit, to some extent, under most all circumstances and most any mode of treatment, and the same variety of vines undoubtedly require different treatment in different countries, and in different soils in the same countries. Some varieties of grapes require a warm, sunny exposure, like the south and southwest side or slope of a hill, while others require a cool, shaded exposure, and will do better on the opposite slope of the same hill. Vines, that in Europe, where the atmosphere is humid and the temperature pretty even, night and day, require a southern and very drying exposure, might, in California, do better on a northern exposure; and still nothing but a practical test of this supposition would do to rely upon.

Thus it will be seen that the management of a vineyard in California is, or should be, different from the management in most other countries in which any of our vine growers have had experience—just as different as our climates and soils are different from the climates and soils of those countries. Hence no invariable or universal rule can be safely laid down or followed for any part of such management.

One important thing that should always be borne in mind, in the pruning of a vineyard, in this or any other country, is the fact that *grapes always grow on wood grown and matured the previous year, or on wood that is one year old.* Hence there are

TWO LEADING OBJECTS

To be kept constantly in mind in all operations in the vineyard, and especially in all the pruning operations:

First—To secure as large an amount of fruit of good quality each year as the vine, considering its age, its present strength, and future good health, will produce.

Second—To secure the growth in its proper place on the vine of a sufficient amount of good, strong, and well matured wood, with plenty of large, plump, unbroken or dormant fruit buds, to insure a crop of good fruit each succeeding year. Whenever the knife or shears are taken up to be used on a vine these two objects should be remembered, and each cut with the knife or clip with the shears should be with a view to the attainment of these two ends.

Having called special attention to the leading objects of pruning the vine, which are the same in all countries, and adverted to the influences of soil and climate in different countries and in different localities in the same country, we will now speak more explicitly of the immediate subject under consideration.

THE FIRST YEAR.

The object to be obtained the first year after the cutting or year old vine is planted in the permanent vineyard, is to secure a good growth of at least one main cane, which shall form the future body of the vine or grape tree, as it may be called. We call it *tree* for the purpose of giving

a better idea of what we want to secure by the first Summer's growth. It is really a dwarf grape tree which we want to secure—with a body of good, sound, and smooth growth—standing erect, at least to the hight we wish our future vines to grow. This object, it is evident, can be best attained by throwing all the strength and growth of the young vine into this one cane or body.

If more than one bud starts from the cutting, *the upper end of which should always be covered at least an inch with soil*, let them all grow only till you can see which throws out the strongest shoot, and in the best position for the future body. Then pinch all the weaker shoots off, and keep them so pinched off during the first Summer, thus throwing the entire strength of the vine into the remaining shoot. Keep this shoot erect or perpendicular by carefully tying it to a stake set in the ground for that purpose. The string or cord used should be soft and of good size, so that it will not cut or injure the tender cane. Of course the soil should be well cultivated, often, during the first Spring and Summer, so as to prevent the growth of weeds and to secure the best growth of the vine. But care should be had not to continue the growth so late in the Fall as to endanger the tender growth to be cut by the first frost at its extreme end.

THE SECOND YEAR.

If a good stand or body has been secured the first year, the principal object to be attained the second year is to keep that body erect and give it as great a growth as possible. It should therefore be cut back to the desired hight soon after the leaves have fallen, in the Fall—generally in this State in November—but the locality and season must govern as to this. If any lateral branches have grown below the point at which it is desired to form the head of the tree, they should now be carefully and smoothly cut off with a sharp knife, and all dormant buds below that point should also be removed. As to the proper hight to make the head of the tree there is some difference of opinion, but we would recommend that it should not be over eighteen and not less than ten inches above the ground. The principal reason in favor of low pruning is, that in the latter part of the Summer, when the grapes are growing most rapidly and approaching maturity, the thermometer shows that the atmosphere at from six to twelve inches above the ground is from six to eight degrees warmer, both at night and in the daytime, than it is from four to six feet above, and that the grape will grow more rapidly, ripen earlier, and be sweeter and better.

Another reason is that the grape near the ground is not so likely to mildew. The head of the tree should be so formed as to balance, as near as may be; consequently, at least two shoots, on opposite sides, should be allowed to grow the second year, and no Summer pruning should be practiced this year, unless it be a little *pinching in*—if it be necessary to secure that balance of growth.

Form a good, smooth, and perpendicular body and a well balanced and symmetrical top or head, and you have done all that is necessary for the second year. A vineyard thus formed will always be a matter of pride and mental satisfaction to its owner, and the future care and labor in attending it will be much lighter than if the vines were allowed to lean this way and that. Then, too, vines erect and symmetrical can hold up, unassisted by props, a much larger weight of fruit, and they will be able to bear and mature them much better without injury.

PREPARING THE GROUND TO PLANT CUTTINGS.

In the first place the ground is plowed and subsoiled from twelve to fifteen inches deep, and then well cultivated or furrowed down smooth. Stakes of redwood are then set just where the vines are to be planted. Holes, two feet in diameter and twenty-two inches deep, are now dug close by the side of these stakes, and all on the same side of them, while the stakes are left standing. The surface dirt taken from the hole is then returned to the bottom of the hole, and the bottom dirt is deposited on the surface, thus entirely changing the relative position of the soil. This being done, the planting of cuttings commences.

MANNER OF PLANTING THE CUTTINGS.

The cuttings are made just twenty-two inches long or equal to the depth of the holes. The operator has an iron rod about three feet long, with a split or crutch in the lower end. He places the butt or lower end of the cutting within this split and holding the iron in the right hand and the top of the cutting in the left, he places the lower end of the iron and the bottom of the cutting on the ground close by the side of the stake, and presses them at an angle of about forty-five degrees, down into the loose earth with which the hole has been filled, until the hard earth at the bottom of the hole is reached. He then holds the cutting in its place and pulls the iron from the ground, and with it works and presses the soil closely or compactly about the cutting, and the work is completed for that cutting; and so he goes to the next.

THE ADVANTAGES OF THIS MODE

Of setting cuttings are obvious. The bottom of the cutting from which the root must start rests upon the packed or compressed earth, pressed down and packed by the iron and cutting as they are forced through the soil. The top of the cutting is left about an inch below the surface, so as to protect it from the drying sun. The rich surface soil being in the bottom of the hole, forces the growth of the roots and plant, while the soil being loose above absorbs and retains the moisture during the season.

We can recommend this mode of planting cuttings to all who propose to start new vineyards or extend old ones.

FARMERS' GARDENS.

BY I. N. HOAG.

There are many anomalous features and inexcusable defects in the system of agriculture as practiced in California. We shall endeavor to point out some of these defects and suggest the remedies, in hopes that by so doing we may induce a better, more thorough, and economical system of farming, and thus bring more profit to individual farmers, and comfort and convenience to their families, as well as increased prosperity to the commonwealth.

One of the most striking of these features and one that requires attention at the present time, is the almost entire absence of vegetable gardens throughout the great grain districts of the State. In many of these districts one may travel hundreds of miles through flourishing wheat and barley fields, passing the residences of well to do farmers, and not see a solitary vegetable garden worthy of the name.

Californians as a general thing are too apt to exert all their energies in a single direction and trust all their chances of success, all their hopes of a fortune, to the throwing of a single die. Greatly to the disadvantage of our agriculture, this one idea system of farming has absorbed the attention and monopolized the energies of our agricultural communities. Wheat and barley have been and are still too much the exclusive product of the State.

No agricultural country can be assured of an uninterrupted and continuous prosperity unless it produces as nearly as may be all the necessaries of life. As our agricultural industries are now situated, two or three seasons unfavorable to wheat and barley would render by far the larger portion of our farmers poor, if not completely bankrupt. As it is with a State or large community, so it is with smaller ones or with individuals and families. Those who depend for a livelihood upon the products of the soil should endeavor to produce as near as may be all the varieties of food they consume. Especially should no farmer in this State be without a well tilled and well stocked vegetable garden. One half acre well prepared, planted and cultivated in a good variety of garden vegetables, will administer more to the real wants, comfort, health, and happiness of a family and will save more money to its owner than ten acres devoted to wheat, barley, or other ordinary field crops.

Again, the garden is the place for experiments. It should be in miniature an experimental farm. The man who really becomes interested in and cultivates a good garden, will become a better and more intelligent and successful farmer. By degrees he is led to study more closely the nature and wants of the soil—the treatment adapted to different kinds of plants, and by degrees he applies the lessons learned in the garden to all his farming operations.

The garden is also a great economizer and utilizer of a farmer's time. Suppose that every farmer in the State had at the present time a good vegetable garden attached to his home, how many hours in the aggregate, now wasted in idleness, would be turned to good account—and how many more necessaries and luxuries would be enjoyed by the families throughout the agricultural districts. How many dollars, now worse than wasted in bar rooms and at idle games, would be devoted to rendering our rural homes more comfortable, beautiful, and attractive.

Again, the farmer who cultivates a garden must of necessity and by his own experience learn the important fact that his success does not depend so much on the number of acres cultivated, as upon the manner of their cultivation, and not so much upon the quantity of any one crop produced, as upon the excellence and variety of his crops. The almost universal neglect of vegetable gardens among our farmers may be set down as one of the principal causes if not the principal cause that operates against a more general or universal success of the agriculturists in our State. Strange as it may seem, many of our grain farmers buy almost every article of food consumed in their families from one year's end to another. All the beef, pork, mutton, or other meats; all the potatoes, cabbages, turnips, onions, beans, peas, tomatoes, and other vegetables; all the fruit, and even butter and cheese used in their families for the year, are bought, and have to be paid for out of the proceeds of a single crop of wheat and barley. Thus is kept up a constant drain upon their purses, every day of the year, from the time that one crop of grain is sold until it is time to sell another—and in many cases this drain becomes so great that the proceeds of the grain crop have to be anticipated, and debts accumulate.

Then under such circumstances, if the crop of grain fails, what is the condition of the improvident farmer? Too many have already stared this condition of things in the face, and too many have been thus compelled to reap the reward of this imperfect and reckless system of farming so prevalent in our State. As a counterpart to this want of farmer's or kitchen gardens in the country, we find many extensive and well cultivated gardens clustered about every city and town in the State, so that our markets are as well if not better supplied with vegetables the year round than any other country in the world. Our vegetable dealers in all our towns and cities are among the most successful and prosperous tradesmen in the State, and anomalous as it may appear, yet it is a fact that more of the wealth of these tradesmen has been gained from the profits on sales of vegetables to the farmers of the country than to residents of the towns and cities.

The country peddler is an institution that may be met with the world over. He generally travels from house to house among the farmers selling drygoods, tinware, Yankee notions, and things of a similar character. In California we have this same indispensable institution performing the same duties and supplying the same wants. But here we have also a country peddler of another character—one, under the circumstances, more useful and indispensable to the agricultural or grain districts than the one above referred to. He is peculiarly a Californian institution. He is in fact the grain farmer's *portable vegetable garden*. He buys his vegetables of the dealers in the towns and cities and peddles them about the country. As he deals in articles that everybody in the grain districts wants and scarcely anybody produces, his business is a profitable

and prosperous one. But the fact that his occupation is necessary is a scandal to California agriculture. And the fact that our farmers pay the professional gardeners a good profit on all the vegetables they consume, and then pay the dealer and peddler their liberal profits for handling and conveying them from point to point, is anything but complimentary to the energy, enterprise, and skill of the farmers themselves. So long as such a state of things is allowed to continue, so long will farming in California continue to be an uncertain, speculative occupation, instead of, as it may be, a sure, safe, reliable, and profitable business.

We are aware that many farmers claim that, under the dry climate of California, vegetables cannot be profitably raised in the wheat growing districts of the State. We are also aware that but a few years ago the same doubt was almost universal in regard to the growth of small grains on these same soils. Time and experiment have fully controverted the latter doubt, and we firmly believe that a little more time and a little more experimenting will as fully controvert the former. We believe the defect is not in the climate, nor yet in the soil; and we will endeavor to show that our belief is well founded. We will also endeavor to point out to our farmers the time for planting and mode of cultivation necessary to be pursued in order to succeed in making good vegetable gardens in the grain raising districts, and thus secure to all good, fresh, and healthy vegetables from their own grounds.

There seems to be a prevailing dislike or distate among farmers generally, and more especially among American farmers, to the care and cultivation of kitchen gardens. There is probably no State in the American Union in which the dislike is more deep seated and universal than in California. Our California farmers are possessed with almost a universal mania for the cultivation of broad fields—of extensive farms of from one to ten thousand acres, where more physical and less mental labor is required.

This system is more speculative, has more excitement in it; and if liable to great losses, it still, under favorable circumstances, *may* bring great gains. This element is what gives it favor with our California farmers.

On the other hand, the cultivation of the garden is no speculation. Though a small business, it is safe and sure. But the garden, to be made successful and profitable, requires the exercise of judgment, system, and patience. These, accompanied with a little care and attention at the proper time, would secure to every farmer in our State, whether his farm be large or small, a good garden, from which, at almost all seasons of the year, his table could be supplied with an abundance of the choicest vegetables—crispy and fresh from the soil.

What California farmer, or farmer's wife, would not like, in the early Spring, to be able to step from the house into a well inclosed and well cultivated vegetable garden, in which, each in its appropriate place, were growing luxuriantly all the luscious, early vegetables—such as lettuce, radishes, peas, beets, turnips, onions, potatoes, tomatoes, sweet corn, beans, carrots, parsnips, etc.? No matter if a sweet pea vine, a honeysuckle, a pink, a geranium, or other innocent flowers were allowed a little share in such a garden, in the stead of weeds, they would do no harm, but would add, by their cheerful presence and delightful fragrance, to the pleasurable emotions of the owner or other members of the family when they step out to pluck some of the choice fresh vegetables for the breakfast or dinner table.

After ornamenting the garden it would detract nothing from the

cheerfulness and happiness of the family at the meal if a few of these flowers were permitted to ornament the table; they might in this way preoccupy the places in some young mental gardens that would otherwise be usurped by tares and weeds.

We presume we shall find no one to disagree with us in the proposition that every farmer in the land should have a vegetable garden attached to his house; and we come now to consider the question suggested above: "Whether the grain farmers, in the recognized grain districts of the State where the soil is of a clay or adobe nature, can raise good vegetables with success; and if so, what are the conditions necessary to that success?" To the former portion of this interrogatory we have no hesitation in saying *yes;* and will at once proceed to the consideration of the necessary conditions.

THE WILL.

No man can succeed in any business unless he has the will to do so. Having determined that an object is worth striving for—in this instance that a good garden is worth the trouble required to make and maintain it, he must thoroughly make up his mind that he *will* have one; that he will, in the first place, set apart a piece of land to be especially devoted to the garden; that he will enclose it so as to keep out stock of all kinds as well as fowls. A high, tight board fence would insure the double purpose of such inclosure, and as a wind break, which in many places would be a great benefit. Having determined that he will devote the necessary land for the purpose, and that he will give to the garden the required time, the next consideration is the

LOCATION.

This, for many reasons, should be near the house. Many leisure moments of the farmer himself and of his boys, and hired labor that would otherwise be lost, could thus be turned to good account by working in the garden. Many steps of the housekeeper would also be saved in going to and from the garden to pick the vegetables, and the table would be more likely to be at all times supplied with fresh vegetables, if in the garden.

Again, a good vegetable garden attached to the house tends to add to it the appearance as well as the realities of home. It concentrates the home attachments, strengthens the domestic feelings, and brings into activity many of the finer virtues. If near the house it will be under the eye and supervision of the household, and will be a pleasant resort for females and children of the family; thus administering to their health and pleasure, by inducing exercise in the open air, as well as by affording agreeable and healthy food. There will also more likely be better taste displayed in the arrangement of the garden and more care and attention bestowed in keeping it in a good state of cultivation if near the house; for the reason that the interest as well as the taste and pride of the wife and daughters will be brought into exercise, and have their influence over those who do the labor. It will also be visited by neighbors and friends, with a view to compare notes and make friendly observations and suggestions; and thus will be kept up a friendly and healthy rivalry in neighborhoods, both as to the general arrangement and surroundings of the house and the quality and early maturity of the products of the garden. For what is more unpleasant to a farmer's

family of spirit and pride, than to know that their next neighbors are enjoying the luxury of early asparagus, peas, beans, lettuce, etc., when theirs will not do to pluck for days, and perhaps weeks? The best soil for a vegetable garden is undoubtedly a deep, rich, sandy loam, so composed that it will absorb a great quantity of moisture, and allow it to pass so far below the surface that it can be cultivated very soon after heavy rains, and at the same time retain that moisture so it will keep the surface moist during the dry season. It should contain sufficient muck and clay to give it strength and durability, and sufficient sand to prevent sun or surface burning. It should be porous, to allow the air to penetrate as deep as the roots of vegetables will grow.

We have a great deal of excellent soil for gardens in California. The land along the creeks and rivers of the entire State, outside of the mountains, generally called "made land," is well adapted to this purpose. Many of the small valleys in the foothills and many of the hills themselves contain soil already prepared by nature for the most successful cultivation of vegetable gardens. A very large proportion of the soil in the State, however, located on the broad, open plain, one elevation above the immediate river banks, is too heavy and contains too much clay and sticky substances for the successful cultivation of vegetables. It is too wet in the rainy season, and too dry and hard in the dry season. Such, generally, is the character of the soil in what we have termed the grain districts of the State. While such soils, properly cultivated, are well adapted to the production of the small grains, they require some artificial manipulations and changes to make them good for gardens. To show what these changes are, and how they can be made, will next claim our attention.

PREPARATION OF SOIL.

The soils along our river banks are generally called "made land," and are principally composed of clay, fine sand or sediment, and decayed vegetation. They are of recent formation, and have been made by the operations of nature. The annual deposit of the leaves of the forests, and the annual growth of the grasses and weeds, have been covered by the occasional overflow of the streams, bringing along and depositing fine clay and sand from the mountains. Since the commencement of mining in this country the making of land in this manner has been going on very rapidly. If the deposit has been with too great a proportion of clay, then the soil thus made is heavy, stiff, and sticky, and though very rich and strong and excellent, when properly and carefully worked, for some kinds of crops, it is not well adapted to the production of garden vegetables. It settles too close and compactly together when wet by heavy rains or overflows, and if allowed to dry without stirring, it is so hard and stiff that it is almost impossible to plow or work it at all. If worked in this condition it is unproductive—the lumps and clods refuse to yield to the roots of vegetation the necessary nourishment and food for their growth. If plowed when too wet its condition is still worse—it assumes the hardness of puddled soil or manufactured adobes. Such soil must be worked with the greatest possible care and only when in a proper condition, and even then it is not good for garden purposes. You may with great care get your seed into such soil in good condition, but if you have a Spring shower, followed by warm, sunny days, before your vegetables are out of the ground there will form a crust over them which it will be impossible for the tender shoots to penetrate, and you

will be under the necessity of replanting. We have seen corn and peas, and even beans, after sprouting vigorously, thus prevented from coming out of the ground by a crust formed on the surface.

The proper proportion of sand and vegetable decomposition mixed with the clay tempers the soil and renders it easily worked at all times. It renders it porous and susceptible of absorbing and retaining moisture in the proper degree to dissolve the nutritious elements of the soil, and thus feed and nourish the plants. We have seen just such stiff adobe soils as we have described above completely renovated and converted into the very best of garden land by a single overflow of a river, and a deposit upon it of two or three inches of fine sand. By plowing deep and cultivating and mixing the deposit of sand with the old clayey stiff soil, we obtain a lively mellow and porous soil capable of being worked at almost any time in the year without injury. A soil that will allow the air to penetrate to a great depth, and which will extract from that air sufficient moisture to support the growth of plants in the driest of seasons. We have known large tracts of land bordering the Sacramento River to be thus changed, and more than quadrupled in value, by the deposits of a single overflow. We have known such renovated land to rent annually, for garden purposes, for more money than it could in its original condition have been sold for. Thus nature manipulates and makes land and changes whole sections in a single year from stiff, heavy, and intractable soils to light, lively, and sandy loams, thus doubling and quadrupling their value for many purposes.

A LESSON FROM NATURE.

From such operations of nature, the farmers, on the stiff, clay soils of the prairies and oak openings of our State, including all our red soils, and in fact nearly all of what are generally recognized as the best grain districts, may learn an important lesson. From these operations they may learn just what they may do with a small piece of land to give each of them as valuable a garden spot as nature ever formed. These prairie soils are stiff and heavy, and want to be tempered with sand and vegetable matter. The vegetable matter is always at hand in every barnyard. There are but few localities in this State where plenty of good sediment sand cannot also be obtained within a reasonable distance.

One hundred and sixty feet square—a space sufficiently large—for a good vegetable garden for a large sized family, could be covered three inches deep by almost any farmer, within a year, and he would scarcely feel the expense. Having selected the place for the garden, he should in the first place plow and subsoil it, at least from sixteen to twenty inches deep—two feet or more would be still better. Then draw on the manure—well rotted barn manure would be best—and sand in about equal proportions. Let the whole be thoroughly mixed with the soil, as low down as it has been subsoiled, but leaving a larger proportion of sand and manure mixed with the surface foot of earth. A deep ditch—say three or four feet deep—around the entire plat, with two or three blind ditches, say two feet deep, and equal distances apart running from one side to the other and emptying into the border ditch, would add very much to the life and elasticity of the soil and to its productiveness. It may be doubted by some whether land on the dry plains of California would be benefited by drainage. In answer to this doubt we would remark that the object of such drainage is to introduce air into the soil and thus render it more moist in dry weather, as well as lighter and drier in wet

weather. It has been well and truly said, "that drainage makes cold land warmer, wet land drier, dry land wetter, and heavy land lighter." The principal object to be attained by the introduction of sand and manure, is to open the pores, as it were, of the soil and keep them open; and this object is still more perfectly attained by the proposed drainage. It enables the soil to breathe, and thus extract from the air the moisture as well as the fertilizing gases, and distribute them among the rootlets of the growing plants, just as the lungs of the animal extracts the oxygen from the air and diffuses it through the animal system. Soil thus prepared will thereafter require only an annual top dressing and good cultivation to render it almost incredibly productive.

SELECTING GOOD SEED.

We presume that most farmers will, when they have fairly initiated the garden system in this State, raise and save garden seeds for their own use. It will pay them to do so, provided they understand the true principles of reproduction and exercise the necessary care and patience to practice upon them.

In the animal kingdom it is a well established rule, and one that is generally understood, especially by stock growers and farmers, that "like begets like." This rule holds equally good and is equally important in the vegetable kingdom. In selecting the vegetables from which seed is to be saved for replanting care should always be had to choose only the very best samples. For instance, if you propose to save beet seed, you should select the best shaped and best grown beet, one possessing all the characteristics of color, form, fineness of grain, and all other properties which it may be desired to reproduce.

Then care should be taken to plant the beet in such soil and location as will secure to the seed the best possible chance to grow and mature in the most perfect manner. From the seed thus carefully grown none but the *best* should be saved for planting. The same care should be exercised in regard to producing the seed of all other vegetables. By so doing and by the interchange of seed between different countries and different localities in the same country all our crops of vegetables and grains may be much improved.

It is the present practice of most of those farmers who cultivate gardens, whether as professional gardeners or only for their own tables, to buy all their seed from the various seed stores in the towns and villages. This practice has one advantage—it secures an interchange from one locality to another; but we find that as a general rule those who produce the seeds so sold neglect a strict compliance with the acknowledged rule of reproduction above referred to. Their seeds are sold by the pound, and the more pounds the more dollars.

Without desiring to decrease the business of any one enterprising seed man, we would recommend that each farmer, as soon as possible, inaugurate the practice of producing his own seed of all kinds. He may then interchange frequently with his neighbors and friends who exercise the same care with himself, and he may thus improve all his crops from year to year. In the long run we think this will be found the most economical plan, as we shall never be subjected to the trouble, expense, and vexation caused by planting dead or poor seed, and being under the necessity of replanting and suffering the loss of time thereby.

TIME FOR PLANTING.

One of the greatest mistakes connected with gardening in this country is in planting many varieties of seed at the wrong time of the year. Our Winters are so mild in this State that many varieties of vegetables will grow better and be more tender, juicy, and more delicately flavored if grown in the Winter or rainy months than if grown in the Summer or dry season. The seeds of such kinds should be planted in the Fall instead of Spring.

Our professional gardeners, especially the Portuguese, Italians, and Chinese, understand this, and hence we are so often found admiring the luxuriant growth of the vegetation in their gardens when our own gardens are not yet planted; and hence, too, the "China vegetable man" takes many a dollar from our pockets for vegetables before ours of the same varieties have made their appearance above ground.

The markets of our cities and towns are supplied with beets, carrots, parsnips, cabbage, radishes, lettuce, celery, salsify, small onions, and other kinds of vegetables, fresh from the grounds of the professional gardeners and in good condition, during every month of the Winter season. These vegetables are all grown in the open air. The seeds are planted in August and September while the ground is warm, and with care and attention and irrigation they are made to germinate and grow until the first rains fall. These rains find the soil warm, and the rains themselves are generally warm like Spring showers. The vegetables thus started grow rapidly and continue to grow during the whole Winter. Here we have a lesson for our grain farmers to learn and imitate. From a small piece of land, prepared as we have directed and sheltered from the winds, the table of every farmer in our State may be supplied with the greatest abundance of fresh vegetables of all the above varieties from October to May.

From this time on may be added asparagus, rhubarb, early peas, cucumbers, green corn, early beans, squashes, tomatoes, potatoes, and other early vegetables. As the season advances the later kinds and other varieties come on and supply the place of those that are gone by. Add to these luxuries strawberries, raspberries, currants, grapes, cherries, and other and larger fruits in their seasons, and we have a continuous supply of the most delicious vegetables and fruits the year round. Then by a little forethought fresh milk, butter, and cream may be provided from two or three good cows pastured in a small field of Chile clover that will keep green the year round.

With these facts before us, all of which may be fully realized by any careful and industrious farmer in this State, we may well exclaim, who can live *better* or *cheaper* and more *independent* than a California farmer! What advantages he may enjoy over his neighbors of the Atlantic States or most any other part of the world!

It seems not to be generally understood that pea vines will stand a pretty heavy frost without much injury, and that peas planted in the month of January or February will grow and make vines and be all ready to blossom and bear peas upon the first appearance of warm Spring weather. Such is the fact, and if peas are planted in February in good warm soil, and in a protected locality, they will generally furnish this delicate vegetable for the table before the time it is now generally the custom to plant the seed.

Potato tops are easily checked in their growth by a slight frost; but

unless the frost is pretty severe this injury does not reach below the surface of the earth and is but temporary. The roots continue to grow and the tops start up again with renewed vigor.

As a general thing it is safe to plant early varieties in February, and by covering the surface with straw or coarse stable manure they may be brought forward very early—so early in fact that no inconvenience will be experienced from the wilting of the old potatoes before the new ones will be large enough to take their place on the table.

It is too generally the received opinion among farmers on the uplands, that potatoes cannot be raised on such soil. If the land be prepared as we have suggested, and the potatoes are planted early, so that they will have the benefit of the late Winter and Spring rains, they will make a good crop, and form a most acceptable dish on the table when fresh dug from the garden.

HOT BEDS.

Professional gardeners understand and appreciate the advantages of hot beds in bringing forward for the market their early vegetables. Professional florists also avail themselves of the hot house or green house to bring forward their early flowers. With a little care and extra expense they each, in this way, obtain extra prices for their products, and are well repaid for the extra expense and labor. In this country, above all others, liberal prices are cheerfully paid for vegetables, fruit, and flowers offered for sale out of the ordinary season, either *very* early or *very* late.

But farmers being generally away from the towns which afford markets for the professional gardeners, cannot, even if they would, avail themselves of the luxuries of these extra early vegetables from the market gardens. They must therefore either deny themselves and families many luxuries enjoyed by the denizens of the towns, or contrive some mode of producing those luxuries for themselves. We are among those who believe that, above all classes of people, the farmers may and should become the best livers, in all respects, in any country, and especially in California.

We believe that the farmers of California, if they choose to avail themselves of the advantages they naturally possess, may enjoy more real and substantial luxuries—luxuries, we mean, produced from the soil—than almost any other people in the world. It shall be our aim to point out the ways and means by which these luxuries may be produced and enjoyed.

Early vegetables cost the denizen a considerable *money*—they would only cost the farmer a little *time*, with the additional advantage in favor of the farmer that he and his family might enjoy them direct from his garden, fresh and crispy, while before they appear on the table of the denizen they have been handled and mussed over till they have lost half their attractiveness and real value.

If there is one farmer in this State who has a hot bed, made and used exclusively for the purpose of producing early vegetables for the use of his family, we have not seen that man. We do know of many who make it a practice to make hot beds every Spring in which to sprout their sweet potatoes, but they seldom use them for any other purpose. Those who raise sweet potatoes for sale are compelled to have hot beds to obtain the sets, otherwise they would not probably make them.

How to make a hot bed.

Farmers generally imagine that it is a great deal more trouble and expense to make a good hot bed than it really is. Many of them never having seen one do not know how to make one, and never having experienced the advantages of one cannot appreciate them. For the benefit of such we give the following cheap and easy mode of construction and management: Make a frame or box, say three feet wide, and six, nine, or twelve feet long, depending on the size of the bed you desire. It may be made of inch boards and should be, say one foot deep in front and eighteen inches on the back. Dig out a trench in the garden on the south side of the fence the same size as the frame and eighteen inches or two feet deep. Fill up with fresh horse manure mixed with straw—about as it comes from the stable where horses are carefully bedded with straw—to the depth of a foot or fifteen inches. Then put on the frame and cover the manure from eight to ten inches with good, rich, sandy loam, or light warm soil, that will not bake or crust over when sprinkled with water. Bank up the outside of the frame with the same kind of manure used inside, and cover with common window sash of the proper size to cover the frame, and your hot bed is completed; and as soon as the manure begins to ferment and heat it is ready for use.

How much has it cost? About one day's work, and the price of the windows used. The expense of the window may be dispensed with, and any old piece of canvas, or a bed sheet, or old mat may be used instead and answer a very good purpose, though the glass is better, as it lets in more light and heat from the sun.

Now plant your seed in rows across the bed and in a few days you will have the satisfaction of seeing the plants for an early garden bursting up through the warm soil. In warm pleasant days the cover should be left off, and the plants should be sprinkled with water from which the chill has been taken just enough to keep the soil moist and steaming. As soon as the weather is warm enough, and the plants of sufficient size, they may be transplanted to the warmest part of the open garden, being careful to protect them from the cold nights, if any occur.

By this simple means every farmer's table may be supplied with a plenty of all kinds of vegetables as early as they appear in our market, and much better. Try it once, and we guarantee that it will pay.

Tide and overflowed lands.

As Corresponding Secretary I received an invitation to accompany an excursion to the swamp and overflowed lands located about the confluence of the Sacramento and San Joaquin Rivers, and deeming them of so much importance to the agricultural interests of the State, I propose to give a brief description of those lands, both as to their location and character.

As many of our readers have probably never given much attention to the subject of the tule and overflowed lands of our State, we will first very briefly give them a general idea of the location and character of these lands, and the means adopted for their reclamation.

The two great rivers above named, and all their large tributaries, have a strip of tule land on each side of them stretching from their entrance

into the valleys to the points where the latter empty into the former, and from thereon until the former reach and lose themselves in the bays leading into the Pacific Ocean.

Originally these rivers are supposed to have flowed through the lowest points in the valleys, but the annual overflows to which they are subject have gradually deposited debris and sediment on their immediate banks until all through the upper portions of the courses and until they approach their mouths, these banks are from ten to twenty feet higher than the lands, from one half mile to three miles back, so that all our navigable rivers are literally "highways of commerce." Into these low lands or basins thus formed empty numerous creeks from the foothills of the Sierra Nevadas and Coast Range of mountains, and the overflows of the rivers at high stages of water keep them full during the wet seasons, and generally well into the Summers. Hence the soil becomes wet and swampy, and all vegetable growth coarse and rank.

To this coarse grass the Indians gave the name of "tule," and this name has hence been applied to the lands themselves.

As the Sacramento and San Joaquin Rivers approach the straits and bays into which they flow—only a few miles apart—their banks gradually become lower and lower and the distance back to the edges of the tules becomes less, until finally the rivers themselves seem to break up into a great number of smaller rivers or watercourses, called sloughs. These sloughs stretch out to the right and left, dividing the tule lands into a great number of islands of all shapes and sizes, until hundreds of thousands of acres are thus cut up and surrounded by a system or net work of navigable watercourses.

The islands thus formed, like the banks of the main rivers, are generally higher next the water's edge than in their centers, and for similar reasons; but these banks are generally but little above high tide at the low stage of water in the Summer season. The waters of the rivers, however, having here so many channels through which to flow, are comparatively but little affected by a rise which overflows the banks of the main rivers and floods the whole country above. Hence it is comparatively a much easier task to keep the waters of the sloughs from overflowing these islands than it is to keep the waters of the main rivers higher up the country from overflowing their banks and flooding the tule lands we have described as stretching along on either side of them.

THE IMPORTANT FACT

So potent to all now, has only been discovered and practically appreciated by the people of this State, after an experience of nearly twenty years, derived from an almost constant yet fruitless and costly effort to reclaim the tule lands along the main rivers of the State.

For the discovery and practical demonstration of this valuable truth we are indebted to a few humble farmers, who some twelve or fifteen years since settled upon Sherman Island, and who have since that time pretty effectually reclaimed the whole island from overflow and brought it into a good state of cultivation. In doing so they have acquired for themselves and their families a good competency, if not a fortune. While these men were struggling along from year to year, alternately cultivating their crops and working on their levees,

GEORGE D. ROBERTS,

A gentleman who is now the great leading spirit in nearly all the swamp land reclamation enterprises of the State, was a practical and successful miner in Grass Valley, Nevada County. Having met with some severe losses in his mining operations, he was looking about him for some other and more safe place to invest his money. By accident his attention was called to the operations of the farmers on Sherman Island. He went personally to investigate the whole subject for himself, and having observed the productiveness of the soil and the feasibility of the reclamation of all the islands similarly situated, he at once commenced buying up these lands and urging his friends to do likewise.

He soon succeeded in forming what is known as the Tide Land Reclamation Company, composed of some of the heaviest and most enterprising capitalists in the State. For the last two years he has been perfecting plans of reclamation, organizing labor and machinery for their completion, and calling the attention of the public to the great value of these lands, and to the additional wealth and prosperity their reclamation and cultivation would bring to the State. For this latter purpose he conceived and organized

THE EXCURSION TO THE TULE LANDS,

To the valuable incidents and lessons of which we will now call the attention of our readers. The invited guests were about eighty, consisting of business men, capitalists, and representatives of the press, mostly from San Francisco, Sacramento, Santa Clara, Yuba, and Nevada Counties.

The party left Sacramento at about eight o'clock on Friday, October twentieth, eighteen hundred and seventy-one, on the steamer Victor, Captain Sommers. After stopping at two different points on the river we arrived at R. Kerchival's, at the head of Grand Island, at noon.

This island lies directly in the forks of the Sacramento River, and about twenty-five miles south of Sacramento. It is the first of the system of islands formed by the breaking up of the river into sloughs, as above described. It is bounded on the east by what is called the Old River, and on the west by a branch called Steamboat Slough. It is favorably situated for catching the debris and sediment floating down the river, and hence, as might be expected, the banks are higher and more firm than those of the islands further down. The strips of land between the immediate banks of the river and the tule toward the center of the island is quite wide, and for four or five miles down on either side is occupied by settlers, most of whom have very fine farms in a good state of cultivation. The climate here is excellent, being a happy medium between the windy region further south and the oppressive heat further up the river.

The country for six miles above this point, and as many miles below, is without exception the best for peaches in the entire State. The early and late Crawford peaches, which at Sacramento are hardly worth raising, here grow and ripen in the greatest perfection, and make the most valuable market peach we have. The plum, apricot, and nectarine also flourish in great perfection here. Apples and pears do well, and grapes grown here, though of but little value for wine, command the highest

prices in the market for table use, being very large, well covered, and of most excellent flavor.

We went back from the river about a mile here for the purpose of examining the soil where a deep ditch was being cut; this ditch being the upper end of the canal which is to be dug through the center of the island for drainage purposes. We found the surface, about a foot deep, to be a fine yellowish sediment of tule deposit; then to the depth of about four feet more the soil was a mixture of loam and clay, checkered with streaks of decayed vegetable matter. We did not see the soil deeper down, but were apprised by Mr. Kerchival, who had the ditch dug, that immediately underlying this clay was a strata of some four or five feet deep of almost unmixed decayed vegetable matter, having much the appearance of a rotten dunghill. This island is about twelve miles long, averages about three miles wide, and contains about seventeen thousand three hundred acres; of this about seven thousand acres, mostly next the river banks, is owned by settlers. About two thousand acres, running diagonally across the island from water to water, is owned by William Gwynn and Henry Miller, of Sacramento, and the balance, the center portion, is owned by George D. Roberts.

It is estimated that six dollars and thirty cents per acre will defray the entire expense of the work necessary to keep the water off this island. The levee around the island will be about twenty-nine miles long; about twenty miles of which is already completed and the balance will be done in five weeks time. The work is let to Chinamen by the job, at from twelve to seventeen cents per cubic yard. There are over five hundred Chinamen now at work on the levee. The average width of the base of the levee is thirty feet; it is six feet high. The width of the top is three feet, and the inside slope is one and a half to one, the outside is two and a half to one. The earth is taken from the outside or next the river. All the sloughs making into the island are substantially dammed and provided with flood gates, so arranged that the gates close at high tide and open at low tide; so that while the water is prevented from passing in, all the seepage water runs out. The same gates will answer the purpose of irrigation, should it ever become necessary.

NEXT YEAR'S CROP.

It is the intention of the owners of the tule land on this island to have it all cultivated and cropped next season. They propose to lease it on shares for a term of three years. The tule is now being burned off of some portions of it, and all will soon be in condition to burn. After the tule is burned, it is expected that most of the land on this island will require to be plowed before sowing. On the islands, lower down, such as Sherman and Twitchell, the surface being composed mostly of decayed vegetable matter, when once dry, will burn down until the fire reaches the water, and is stopped by it. On Grand Island, as we have stated, this same vegetable matter is found in most places, some five feet below the surface, having been covered by late deposits of sediment which is gradually forming into loam and clay.

The sediment and clay, however, instead of raising the surface of the land equal to the thickness of their deposit, seem by their weight to have sunk the vegetable matter nearly that much into the water except near the banks where the soil is thickly studded with the roots of trees, which seem to have held the soil to its normal position. This fact secures to this island all the advantages of water near the surface, and

at the same time it has a soil rich in the elements of production and most certainly so in those of durability.

LATE POTATOES.

While our attention is on Grand Island we will state that on our return trip, when most of the party had gone to San Francisco and Sacramento on the regular boats, the Victor ran up through Steamboat Slough and stopped at a ranch on this island, some two miles from its head, in order to let us see some late potatoes growing on the tule land.

They found here a field of fifteen acres of potatoes growing most luxuriantly, the bulbs being quite plentiful in number and generally of fair size—some being as large as a man's fist. They were of the Pigeon Point red seed. The tule, which was very heavy and tall, had been cut down in June, and after drying had been burned. The ground was then plowed and harrowed well, and plowed and harrowed the second time. The potatoes were planted between the twenty-sixth of July and the second of August. Had Early Rose seed been planted, the crop would have been ripe and could have been dug some time since.

ANDREW'S ISLAND.

On the east and southeast of Grand Island, and separated from it by the Old River, lies Andrew's Island. This is as long as Grand Island, but not more than a mile wide on an average. Some four or five farmers in the center of it have clubbed together and built cross levees above and below them and next the sloughs on either side, and have produced this season most excellent and satisfactory crops of wheat, barley, corn, potatoes, and other vegetables. No general work for reclaiming this island has yet been commenced, but we understand there soon will be.

Still to the southeast of Andrew's Island are two other long, irregular islands—Tyler and Staten—containing about twelve thousand acres each, and separated from Andrew's Island by the Georgiana Slough and by the North Fork of the Mokelumne River. We did not visit these islands, but they are said to contain very valuable tracts of land and susceptible of easy reclamation, which is already commenced.

SCHOOLCRAFT ISLAND,

Containing twelve thousand acres of land, lies directly west of Grand Island, being bounded on the north and west by Miner's Slough, and on the west by the west branch of the Sacramento River. The land of this island, viewed from the boat, seems lower than that of Grand Island, and has not been covered with so heavy a bed of sediment. It looks as though it might be more difficult of reclamation. The next island visited by the excursion party was

BRANNAN ISLAND,

Which lies directly south of Grand Island and east of the town of Rio Vista. The reclamation company own most of this island, and are now engaged in damming the sloughs that put out into it, and putting in flood gates preparatory to a thorough reclamation by levees. Upon this island, at Smith's ranch, we found a fine vineyard of Mission grapes. The bunches were the largest and most compact we have ever seen of

this variety, and the grapes were very large and fine flavored. In this vineyard we noticed the salt grass growing most luxuriantly, indicating the presence of alkali, which, however, seemed to produce no visible effect on the vines or fruit.

We also noticed here fig trees of the large purple variety, full of fruit, in all stages of growth, from the size of a kernel of corn to the full sized, ripe, and luscious fig. At Sacramento the second crop of fruit all ripened on this variety of trees some three weeks since, and no more is starting. This difference in bearing must be attributable to the difference of climate and supply of moisture to the roots.

It being now near night, and Mr. Roberts wishing to save all the time he could and enable his guests to see as much as possible of interest by daylight, headed the Victor for

THE WEBB TRACT,

A large piece of swamp land in Contra Costa County, fronting on the south bank of the west channel of the San Joaquin River for some twenty-five miles, and running back to the high lands. It contains about fifteen thousand acres, and is owned by Roberts, Kimball, and McMurtry, who are driving forward the work of reclamation as fast as possible.

One advantage this tract has over those on islands is that it runs back to high lands, and in times of very high water stock can be very easily driven to these lands for safety. Another is that the expense of reclamation will be less, requiring a levee only on one side. We notice the owners fully appreciate these advantages, as they hold the land at one hundred dollars per acre for the entire tract. The levee is being constructed here by machinery. There are two steam machines at work by the job or contract at ten cents per cubic yard.

THE ROBERTSON MACHINE

Works very similarly to the ordinary dredging machines. It is transported on a scow which floats in the canal made by the excavation. It cuts the canal or ditch twelve feet wide and four feet deep at one swath, and deposits the earth on one side in the shape of a rough levee, which is afterward faced up with the shovel by Chinamen. It does its work well and makes on an average about three hundred and twenty running feet of levee in a day. Considering that this machine is the first and only one built under the patent, it is a good success and promises to become valuable to its owner, and very useful in the reclamation of the tule land.

THE ROBERTS MACHINE

Is moved on wheels, laying and taking up its track as it goes. It cuts four feet wide and four feet deep at a swath, elevating the earth by an endless chain elevator, and depositing it on the opposite side of the ditch from that occupied by the machine. To widen the ditch and increase the levee it repeats the swaths, lengthening the elevator and depositing the earth each time on the top of the first deposit. We did not see this machine work, but were assured by Mr. Kimball that it was generally considered as a more promising one than the other.

SHEEP AND CATTLE.

On one portion of this tract, the proprietors have twenty-five thousand head of sheep, which have been grazing there all Summer, and look in a very good condition. Another portion of ten thousand acres is leased to Lux & Miller, of this city, who have on it eleven thousand head of cattle—less than an acre to an animal. These cattle have occupied this pasture since Spring, and they are now in such a condition that their owners are making weekly shipments to supply the San Francisco market with beef. We noticed, growing on this tract, a number of varieties of clover, and a great profusion of native grasses. When fully reclaimed and burned, we have no hesitation in believing each acre of the entire tract sown in Chile clover would produce annually from six to nine tons of good hay, and in addition keep an ox or horse in good condition from September each year until the first of December.

BURNING THE TULE LANDS.

On the lower end of the Webb tract the proprietors propose to plant this season five thousand acres in wheat. This portion was ditched last year and has "dried out," as they term it, when they mean to say the land is ready to burn.

Here we saw the burning process in operation. The tule and grass is set on fire and is rapidly consumed. But the fire is not satisfied when it reaches the soil, but penetrates and consumes this also until checked by the dampness underneath. This reached, the burning ceases, leaving a few inches of light ashes and charred soil as the remains of the spongy vegetable composition. This process lowers the level of the land from four to six inches. In this condition the land is ready for the seed, but being too soft and miry to support the weight of horses or cattle, it cannot be cultivated with teams and harrows in the ordinary way.

Hence the plan of treading in the grain with *sheep* has been resorted to and found to work well. The large flock is divided up into smaller ones of two or three hundred each, and a boy and shepherd dog takes charge of each of these small flocks—driving them back and forth as you would drive a team with a harrow, until the whole ground has been tramped over. This is the way the first crop is put in.

The second year the land is generally volunteered. The sheep are brought into requisition in this process also. Too much grain generally falls to the ground, while harvesting, to seed it properly for a good crop; so immediately after harvest the sheep are turned in to pick up this surplus seed, and while picking up some they tramp in the rest, leaving the ground seeded about right and well tramped in.

TWITCHELL ISLAND

Was the next point visited. This island lies directly south of Brannan Island, and north of the San Joaquin River. It contains three thousand six hundred acres. It was leveed last year, but not in time to "dry out" the land in the center sufficiently to burn, so that only one thousand acres, and that in a strip around the edges, was sown to wheat. The Reclamation Company last year sold this island to Minor, Prather & Co.—one of the firm purchasing being George D. Roberts—for sixty-eight thousand dollars, after the work of reclamation was completed.

The proceeds of the wheat crop raised on the one thousand acres planted has been sixty-seven thousand seven hundred dollars—within three hundred dollars of the entire purchase money. Besides this, there are several thousand dollars worth of vegetables now on the land not yet gathered.

The center of the island is now being burned preparatory to seeding and tramping, while the sheep are fattening on the surplus grain left on the last year's stubble, and tramping in or volunteering what they cannot eat.

The levee around Twitchell Island is twelve feet base and three and a half feet high. The wagons used on this island have wheels with felloes and tire six inches wide. The steam thrashing machine and boiler were provided with like wide-wheeled wagons. This precaution is necessary to make them float, and yet, as they roll along over the surface, they stir up clouds of dust.

SHERMAN ISLAND

Lies between the two largest rivers in California—the Sacramento washing the northwestern bank and the San Joaquin the southeastern. The head of the island is within three miles of Rio Vista, and the foot directly opposite Collinsville. We judge it contains about twelve thousand acres; it was the first of this great group of islands leveed, and is in a more forward state of reclamation and cultivation than any other.

We visited but one farm on this island—that of A. J. Bigelow, on the Sacramento River. Mr. Bigelow owns four hundred and thirty acres lying in a body—about half under cultivation. If we had seen nothing before, we saw enough here to convince us that the resources of our State are but just beginning to be known and developed, and that the garden spot of California will yet be found in the tule lands forming the deltas of her two great rivers. Here were grapes, strawberries, watermelons, muskmelons, sugar beets, mangel wurtzels, carrots, parsnips, turnips, squashes, corn, tomatoes, wheat, barley, Chile clover, red clover, timothy, and we cannot say how many other horticultural and agricultural products growing, and all in the greatest perfection, on a soil, the cost of which is not much over half the cost of cultivating the soil of the ordinary upland, while the chances of a failure of any crop, when the seed is once in the ground, are scarcely to be taken into consideration. We were so pleased with the general exhibition of farm products, that in the short time which we had to remain we could gather but few specific facts.

One field, however, we learned was sowed in February last to barley and Chile clover at the same time. There had been gathered from this field a crop of barley of over sixty bushels to the acre, and since that time the clover had been mown twice, yielding each time a ton and a half per acre, and the third crop was nearly in bloom again. Another field was sown to wheat and Chile clover in February. From this field had been gathered forty-five bushels of wheat to the acre, and one crop of one and a half tons of clover per acre had since been cut, and for three weeks two or three head of stock had been feeding on each acre, and the feed was still knee high and growing luxuriantly.

The people of Sherman Island have laid it off into school districts, and have already at least one good public school in operation. They have also laid out public roads, and have a Post Office, and a good wharf at the town of Emmaton, on the west side of the island, at which the Sac-

ramento boats stop every day on their up and down trips. Indeed, they present every indication of a wide awake and prosperous community. Lands there, brought under cultivation, are worth and being sold, when sold at all, for from fifty dollars to seventy-five dollars per acre.

OTHER ISLANDS.

In addition to those above named, we may mention Bouldin, Venice, and Mandeville Islands as in progress of reclamation, each containing from five to eight thousand acres of land, the soil of which is very similar to that of Twitchell and Sherman.

ROBERTS AND UNION ISLANDS.

At a point some twelve miles nearly south of the City of Stockton, where the San Joaquin River divides, one branch called the San Joaquin proper, runs nearly north to within a few miles from Stockton, then bears westerly in a very crooked line to a point at which the Town of Venice was founded and built on paper; the other branch, called West Channel, drops off to the southwest, and finally sweeps back and rejoins the main river about three miles below Venice. The greatest distance between the two rivers is about eighteen miles. The oval-shaped piece of land thus surrounded by these two channels is traversed, a little south of the center, by another river called the Middle Channel, thus forming the two large islands known as Roberts and Union Islands—the former contains sixty thousand acres, and the latter from forty-five thousand to fifty thousand, nearly all of which belongs to the Reclamation Company, and is claimed by them to be susceptible of easy and perfect reclamation, and when so reclaimed to be among the most valuable of their swamp land possessions.

DIFFERENT CHARACTERISTICS.

There is a striking difference between the topography of the Sacramento islands, or those washed by the waters of the Sacramento and the sloughs making out of it, and those washed by the San Joaquin and its branches or sloughs. The banks or edges of the former are considerably higher above low water mark than those of the latter, and are all studded with bushes—mostly willow; and with sycamore trees, from twenty to fifty feet high, while the centers of the islands are entirely desolate of shrubs and trees, being covered by a very tall and heavy growth of tule. The banks of the San Joaquin islands, on the contrary, appear to be no higher than the centers, and are almost uniformly destitute of bushes and have no trees of any size, while the centers of the islands are dotted with bunches of willow, and the tules are thinner and shorter—being mixed with a much greater quantity of coarse grass of different kinds, including now and then patches of California clover. Again, the soil of the Sacramento islands is to a great extent clay and a late deposit of fine yellow sediment, underlying which is a strata of almost pure decomposed vegetable matter. On the other hand, the surface soil of the San Joaquin islands has scarcely any other material in its composition than this decomposed vegetable matter.

OVERFLOWS.

The Sacramento River, it is well known, is subject to more frequent overflows than the San Joaquin. The cause of these more frequent overflows is attributable to the fact that the Sacramento has a number of large branches leading direct from the Sierras, and bring to it large accessions of water, while it has but one channel through which to convey these waters until they reach the head of Gravel Island, where they meet a heavy ebbing and flowing of the tide. The San Joaquin, on the contrary, as we have seen, is divided into three about equal channels, some twelve miles above Stockton, which do not again unite until within a few miles of the Sacramento, when another system or network of sloughs come immediately to its relief, and assists in conveying its waters to the broad and deep channel opposite Sherman Island. Again, there is more mining on the Sacramento and its tributaries than on the San Joaquin, and this fact, coupled with the more frequent overflows, accounts for the higher banks and heavier soil of its islands. The difference in timber and vegetation follows the difference in soil—the heavier the soil, dampness being equal, the heavier the growth of trees and vegetation.

TULE ISLANDS AS HOMES.

There is but little doubt that most if not all the islands that we have named can be reclaimed so as to render these lands very valuable—more reliable, in fact, for producing annual crops, or in other words, less liable to failures on account of overflows, than the uplands are on account of drought. Indeed, with the facilities they possess for irrigation, they may be kept up to a good degree of fertility under a system of constant cropping for a long series of years, or an indefinite time, without any other fertilizing applications except what will be supplied from the water. But the important question in reference to their settlement is, can they be made so secure against overflows in such times as eighteen hundred and fifty-two and eighteen hundred and sixty-two as to render property of all descriptions and the lives of the inhabitants safe upon them? For all ordinary seasons we are of the opinion that the present plan of reclamation—ditches and levees—provided always that the levees are made sufficiently high and strong, and watched with care, and kept in good repair, will render them safe not only for the accumulation of property but as homes for the families of their occupants. But how will it be in case of such a flood as that of eighteen hundred and sixty-two, when all the lower country becomes so filled up with the accumulated waters as to check the current in the Sacramento River as high up as the City of Sacramento and in the San Joaquin at Stockton? These islands were then all under water to a depth of equal to if not greater than any of the levees being constructed upon them. When these islands are all leveed, as is now the intention to do, and an attempt is thus made to confine such a bulk of water in the narrow sloughs, will it not necessarily be forced up to a greater hight than when allowed to spread out over hundreds of thousands of acres in extent?

This question addresses itself not only to the individual who owns land here and who proposes to make a home for himself and family, or to have others do so, but it addresses itself to the people of the entire State—to the State Government—whose duty it is not only to reclaim

these islands but to protect the lives and property of its citizens who may live upon them.

ADDITIONAL OUTLET.

Those who have made the reclamation of the swamp lands of this State a study, and who understand the question, have long since come to the conclusion that some additional outlet, through which the waters that accumulate, on the occasions of great and long continued floods, at the confluence of the Sacramento and San Joaquin Rivers, above Rio Vista, may escape more rapidly into Suisun Bay, is a matter of very great if not absolute necessity.

A number of plans for the accomplishment of this object have been suggested by engineers and others, some of which are doubtless practicable and feasible. One which seems to have the approval of many largely interested, and in which every owner of swamp land on the Sacramento and San Joaquin is interested, is to tap Linda Slough, which is a southern branch of Cache Slough, by a canal running back of the Montezuma hills directly into a tributary of Suisun Bay. The distance across is but about seven miles, and the fall from point to point is said to be fourteen feet, or two feet to the mile. The highest point of elevation is some thirty feet, but the distance at this elevation is very narrow—most of the way being but little above the water level. This or some other outlet should be constructed without delay. The interests at stake are too great to be longer sacrificed.

Such an outlet would materially enhance the value of every acre of land lying within the swamp land districts of the Sacramento and San Joaquin Valleys, and these lands should be assessed to construct it. This subject should be brought before the next Legislature early in the session, so that provision for its accomplishment may be made before the close of the session.

THE CUT-WORM.

BY I. N. HOAG.

This is the American name of one of the most destructive insects in the country. It is sometimes called the corn grub, from the fact that it is so destructive to young corn. In English agricultural works these worms are called surface grubs or caterpillers, from the fact that they are always found near the surface of the ground.

The American name seems very appropriate from their habit of cutting off young and tender plants, upon which they feed, as smoothly as if done with a keen edged knife. There are many varieties of this worm, each varying slightly from the other in appearance, and each differing a little from the other in its habits and modes of depredation on growing vegetables. The most common and the most destructive variety is called the

STRIPED CUT-WORM.

It is particularly described by Doctor Asa Fitch, Entomologist, to the New York State Agricultural Society, as a cylindrical worm, usually about an inch in length when disinterred beside the several plants in our gardens and corn fields, and upwards of an inch and a quarter when it is fully grown. Its ground color is dirty white or ash gray, occasionally slightly tinged with yellowish; the top of its neck shining black, with three white or pale longitudinal stripes, a whitish line along the middle of its back between two dark ones. On each side three dark stripes separated by two pale ones, whereof the lower one is broader, often a somewhat glucous white stripe below the lower dark one, and all the underside below this dull white.

THEIR HABIT OF CUTTING YOUNG PLANTS.

Some of this family of worms cut the young corn or other plants, such as tomatoes, cucumbers, melons, wheat, barley, and oats, just below, and some just above the surface. But all alike lay covered in the earth during the daytime, and only come forth to seek their food and do damage in the night. Owing to this habit they are comparatively safe from being devoured by fowls and birds; as also from being caught and destroyed by man. In seasons when these worms are plenty they do great damage, often destroying the crops of the garden, and corn in the fields, so that it becomes necessary to replant several times before a good start for a crop can be made. Sometimes their depredations are so extensive and persistent as to render it necessary to abandon one kind of crop, and plow and plant some other kind not so liable to be injured by them.

REMEDIES.

In cold countries, one of the most effectual modes for destroying these pests has been found to be plowing them out during the freezing season, when in a torpid condition and unable to seek protection under the earth until the frost has done its work. By thus exposing them suddenly to the cold and freezing weather many of them are destroyed, and the ground rendered comparatively free from them the following season. Gradual freezing, however, in the ground and in the places selected and prepared by these worms, it has been found does them no injury. Like many other insects and reptiles, if allowed to freeze gradually with the ground and thaw out gradually undisturbed, they come forth unharmed.

This remedy, however, cannot be rendered effectual in but few of the cultivated portions of California or the Pacific Coast, for the reason that we do not have weather sufficiently cold. When their field of operation is limited, as in small gardens, these worms may be caught and destroyed, by digging from one to two inches deep around the hills of corn, cucumbers, or other vegetables upon which they are feeding. The best time for this operation is early in the morning, before they have gone far after obtaining their night's meal.

This remedy is slow and too expensive to be resorted to for field crops. It has been recommended that corn or other seed be soaked in copperas water before planting; but it is doubtful if this is of any avail, on account of the rapidity with which the earth absorbs and dispenses the properties of the sulphate. If any application can be made effectual to prevent the ravages of the cut-worm, it is evident it should be something applied to the parts of the plants upon which they feed—as the tender stem—and that should be applied at the time they are committing their depredations.

WHALE OIL SOAP

Has been found a most excellent remedy for all kinds of plant and tree lice, including the woolly aphis so frequently infesting our apple trees. It is used in solution or suds made by dissolving about a pound of soap to seven gallons of water, and applied by a syringe.

The efficacy or value of this application is owing in part to the peculiar offensiveness of the smell. Why should not this application, made in the same way, prove equally efficacious to keep away the cut-worm from the young corn, tomatoes, beans, cabbages, etc.? We hope some or many of our readers will try this experiment. One thing is certain, the application will do any young plant good as a fertilizer, and with a bucket of suds and a syringe it can be applied so rapidly as to render it practicable in the fields as well as in the gardens.

HEDGE OR LIVE FENCES.

BY I. N. HOAG.

In any country where wood is scarce (and it seems to be getting scarce the world over), in these days of railroading, wharf building, etc., it becomes a question of no small moment to the agricultural interests to find some substitute for rail, or post and board fences. In this State the expense of fencing land is getting to be one of serious consideration to the farmers. It is operating as a serious drawback to the agricultural interests, and indirectly to all others.

There are but few of our good agricultural districts furnished with a sufficiency of good fencing timber near at hand. Most of the lumber for boards and fences has to be transported from high up on the Sierra Nevada mountains, or from the timber districts of Oregon, and the coast still farther north. All, or very nearly all, the timber for posts comes from a few of the coast counties.

Thus our agriculturists, in all the great central portions of the State, are not only compelled to buy most of their fencing material, but have to pay high rates for transporting the same, by rail or otherwise, from points hundreds of miles away from where they want to use it. These considerations are used with great force in favor of adopting the European plan of fencing—or rather, of *not* fencing.

In the agricultural districts of Europe it is a rare thing to see a fence, even on the division lines between estates, or along the road sides. Very few farmers are able to bear the expense of dividing their farms up into fields, as is the custom in all agricultural countries in America. In many portions of Europe, and more especially in England, a system of growing live or hedge fences has been practiced for many years or generations back. But in most of those localities the land has become so valuable that even these fences are, to a great extent, being dispensed with, the convenience of fences being considered of less moment than the value or use of the land on which they stand.

The American farmers on the contrary have a plenty of land, and have become strongly wedded to the system of dividing off their farms into fields of convenient size for different varieties of crops and for stock. So strongly have they become attached to this system that many of the best and most wealthy farmers, especially in the early history of agriculture in this State, have made themselves bankrupt by an endeavor to keep their lands well fenced. It is certainly a great convenience to the general farmer who wishes to devote some of his land to grain, some to meadow, some to orchard and vineyard, and some to stock; in short, who purposes to follow the only safe and rational system of farming—a diversity of crops and a rotation of these—to have his land fenced off into fields; but we doubt its practicability in this country, unless some substitute can be found for redwood posts and pine boughs.

THE OSAGE ORANGE.

Many of the Western Atlantic States have been, and are still to some extent, laboring under the same difficulty in this respect that we are. Many of those States have of late years adopted the system of live or hedge fences, and have found it to possess many advantages over the old system. In the first place a good osage orange hedge fence, the kind most universally adopted, is much cheaper than a rail or board fence, taking into consideration the first cost only. In the next place it costs much less to keep a hedge fence in order and repair than it does either of the other kinds named, and while the latter will last but a few years the former will last a life time and even much longer. The hedge fence on the open, treeless plains, may, after once being fairly and properly started, be allowed to grow up to a considerable hight, and thus become a good break-wind and shelter for growing crops or stock.

To show how popular these fences are becoming in Illinois, for instance, we will state a fact which has been lately brought to our notice. The first osage orange hedge plants were introduced into that State about twenty years since, and for the first three years there were not sold, in the whole State, over five hundred thousand; while in the year eighteen hundred and sixty-eight there were sold and set out into hedges in that State over two hundred and fifty millions of these plants.

It would be well for farmers to look into this question of growing live fences, in this State, very generally. These fences must be generally adopted, or we must abandon the system of fencing our farms altogether. Lumber is becoming too scarce and dear for fencing material. Wherever the osage orange has been tried, even on the driest of our plains, in Solano County, they have given general satisfaction. There are a number of our nurserymen now engaged in cultivating the plants annually for sale; the principal ones in this part of the State being Fraser & Fisher, of Solano County, and Robert Williamson, of Sacramento.

HOW TO PROPAGATE THE OSAGE ORANGE FROM SEED.

Prepare the ground thoroughly by plowing or spading, and pulverise it finely with harrow or rake. To sprout the seed, put it in a vessel and cover with warm, not hot, water. Keep the vessel in a warm place, and change the water once a day. Let the seed soak from five to ten days, after which pour off the water and cover the vessel with a damp cloth. Keep in a warm room and stir the seed occasionally; in about one week more they will begin to sprout and are ready for planting.

There are a little over eleven thousand seeds in a quart, and it is safe to calculate that a quart will produce five thousand plants, if it is properly managed. The seed should be planted, in this State, in March or April, according to the season, and in drills eighteen or twenty inches apart, with twelve good seeds to the foot in the drills. If the season should prove very dry, and the seed are not on very moist soil, they will want some irrigation; but if on sandy and moist soil, they will probably not need it. If the weeds grow freely it may become necessary to hand-weed the rows before the plants will show themselves, as they are very delicate and tender until they get three or four inches high, and require careful culture and a clear entrance into light. When once fairly out of the ground, they will become hard and strong in a few days.

The rows will now require to be cleaned once or twice a month with

a cultivator and hoe until the weeds cease to grow. The plants in good soil will make an average growth of from three to four feet the first season. The next Spring, or when one year old, they should be transplanted in the hedge and cultivated as directed below.

COST OF SETTING AND CULTIVATING THE PLANTS.

We are informed that plenty of one year old plants can be obtained now for ten dollars per thousand, or enough to make a mile of hedge for ninety dollars. It will cost about twenty dollars per mile to prepare the soil and the plants, and about fifty dollars to keep in order and cultivate them till they are three years old. At this age the hedge will turn stock if it has been well cared for and cultivated. This is certainly the cheapest fence that can be made in this country by over fifty per cent; and when once built, as we remarked before, it will last a life time; while it is well known by every farmer that board fences go to decay here, under the influence of our extremely wet and dry seasons, more rapidly than in almost any other country. For the benefit of those who may desire to set out hedge fences we give the following directions:

PREPARATION OF GROUND.

The osage orange is a very hardy and rapid growing shrub or tree. It is classed, scientifically, with the mulberry, and in many respects is very similar to that plant or tree. It will grow well in most any climate, and will stand great extremes of drought and wet. The usual age for transplanting the plants from the nursery to the hedge is one year. The ground on which they are to be planted should be well and deeply plowed the season before the plants are to be set in it to the width of from eight to ten feet. Then plowed again and subsoiled before planting so as to be completely pulverized.

SETTING THE PLANTS.

The plants should be carefully taken from the nursery, without injuring the roots, and the tops cut off, say three inches above the roots. A deep furrow having been plowed on a line where the plants are to be set, stretch a cord, with knots tied in it every six inches; then sort the plants into classes so that those of a uniform size may be set together. Set a plant at each knot in the cord, pressing the fine dirt compactly about the roots, and leaving about an inch of the stem above the soil. Then cultivate thoroughly, keeping the soil well stirred and weeds down for two or three Summers, allowing the plants to grow naturally without pruning.

PLASHING.

If the hedge is set in a very rich and deep soil, and grows rapidly, it should be "plashed" the second Spring from planting; but if it does not grow so rapidly, this operation should be delayed until the third Spring; or perhaps a better rule would be, not to plash until the hedge will average six feet high.

The old system of cutting back every year to within a few inches of the previous year's cutting, in order to make a thick growth from the ground up, has been abandoned by the best hedge growers, and the

plashing system, to obtain the same object, has been found much better and more effectual, and it is attended with much less labor.

To plash the hedge, begin at one end and cut the first plant half off, on the side towards the next plant and close to the ground, and bind it down to the ground in a line with the hedge, and *from* the next plant. Cut the next in the same way and lay it down in like manner on the first, and so on, twining the branches together so as to keep each plant laid down as near in a horizontal position as possible. Each stump and each body thus laid down will throw out shoots all along the hedge, making a perfect network of canes and thorns from the ground up, so thick that no bird, rabbit, or large animal can get through.

Having thus laid the foundation, the hedge can be trimmed and kept in such shape thereafter as the fancy or interest of the owner may suggest. After cutting and trimming it back until formed into as strong and good shaped hedge as may be desired, it will do no harm to allow it to grow up pretty high, and thus answer as a wind-breaker and a fence at the same time.

OSAGE ORANGE HEDGES FOR OVERFLOWED LANDS.

The tenacity with which this plant adheres to life, and its ability, like the willow, to stand without injury long continued overflows, leads the writer to believe that it may be used for making fences in the tule lands of the State; of course, the land for some distance on each side of such hedges will have to be plowed and kept clear from tules, so as to prevent fires from destroying them, when the tules are dry and liable to burn.

The writer intends to test this question by experiment this season, and hopes that others may do the same; for if the idea is practical, it is worth a great deal of money to those owning land bordering and extending into the tule.

No other fence can be made in these lands of a permanent and reliable character, as the water will wash out the posts and float the fence away.

METEOROLOGICAL REPORT.

By THOMAS M. LOGAN, M. D., Meteorologist to the State Board of Agriculture.

In presenting his usual report, the Meteorologist takes occasion to congratulate the Board upon the propitious season at hand. Although at the present writing the rains are far from being over, still an ample supply has already fallen to insure an abundant harvest and a prosperous year. It is to be regretted that the requisition for the printing at this time precludes the possibility of furnishing as completely as is desirable the tables herewith presented. It was our design to compile a full record of all the different points in the State where observations have been made the present year. This must, however, be deferred to another year, when, it is to be hoped, that with the steps that have been taken to procure more extended benefit from the "Signal Service," our branch of the agricultural department will be rendered more beneficial, and the husbandman will be enabled to operate with certainty in the field, or prepare himself for the storm which heralds itself by the telegraph. Should the bill which has been introduced into the Senate, providing for meteorological observations in every county, become a law, we will then be possessed of the much needed information for determining the relative value of different topographical districts, and the amount of water necessary to be supplied by artificial means in average seasons.

The Central Pacific Railroad Company have shown much public spirit in this respect. From information collected by them and printed in the report of the State Board of Health we compile the following table of the inches of rain at various points from August, eighteen hundred and seventy, to July, eighteen hundred and seventy-one:

PLACES.	Elevation in feet.	Inches of rain .....
Summit	7,017	34.50
Cisco	5,939	33.00
Emigrant Gap	5,230	31.50
Alta	3,612	28.00
Colfax	2,421	31.00
Auburn	1,363	17.50
Rocklin	249	10.00
Chico	150	17.75
Marysville	150	6.75
Sacramento	54	8.50
Stockton	40	4.75
Modesto	75	2.25

In the rapid decrease of the rainfall which is observed as we descend from the Summit to Modesto, there are two decided interruptions; one at Alta, and the other at Chico. As a general rule, the higher the mountains against which the rainclouds are blown from the ocean, the more rain is precipitated on their western slope, while on the eastern side, in the short distance between the Summit and Reno, at an elevation of four thousand five hundred and twenty-five feet, where the rainfall was one foot two and a quarter inches, we find a much more abrupt decrease, amounting to about thirty-two inches. The difference of eleven inches between Chico and Marysville, at the same elevation, in the same large open valley, only forty-five miles apart, and about the same distance from the ocean, is very remarkable, and can only be accounted for by the relative position of the Buttes to the latter place. It will be noticed that from Rocklin to Alta, on the foothills, sufficient rain for all agricultural purposes fell this year (eighteen hundred and seventy), which was a year of comparative drought. The farmers of the valleys were dried out then, while in many places they were almost drowned out by the floods of this year. From these drawbacks, as well as from that of frost, the foothills are almost free. Crops, particularly grapes, are always certain, let the rainfall be ever so short elsewhere.

We are indebted to Chief Engineer Montague, of the Central Pacific Railroad, for the following additional statistics, published in the *San Francisco Bulletin*, of the rainfall at the various stations of the Central Pacific, California Pacific, San Francisco and North Pacific, California and Oregon, and San Joaquin Valley (branch Central Pacific) Railroads, in the years eighteen hundred and seventy and eighteen hundred and seventy-one. These statistics will be found of great value to stock raisers and agriculturists, indicating as they do the localities where moisture is scarce or plenty.

STATIONS.	1870.	1871.
Central Pacific Railroad.		
San Francisco	14.47	23.12
Niles	.....	18.13
*Livermore	2.05	17.80
Ellis	.....	13.12
Stockton	4.53	15.62
Sacramento	6.02	18.26
Rocklin	10.07	20.53
Auburn	15.58	33.94
Colfax	21.33	37.16
Alta (report for December, 1871, wanting)	31.49	14.08
Emigrant Gap (instruments burned in August, 1871; no report since)	22.48	20.35
Cisco	25.81	56.69
Summit	31.90	60.29
*Truckee	17.69	30.84
*Boca	7.73	16.87
*Reno	1.79	4.56
Wadsworth	3.27	4.04
Hot Springs	6.32	5.41
*Brown's	1.61	4.65
*Humboldt	7.16	10.94
*Winnemucca	6.26	6.71
Iron Point	9.57	5.64
*Battle Mountain	2.13	4.01
*Beowawe	1.98	4.24
Carlin	2.21	5.57
Elko	4.96	5.22
Halleck	7.35	7.51
Wells	9.55	9.44
Cedar	.....	3.45
*Toano	4.15	4.66
*Tenace	1.53	3.37
*Promontory	12.52	15.81
Corinne	7.59	14.39
Ogden	5.22	9.46
California and Oregon Branch.		
Marysville	.....	13.17
Chico	.....	22.58
Tehama (no report for November and December, 1871)	.....	6.74
Miller's Ranch	.....	14.30
San Joaquin Valley Branch.		
Modesto	.....	7.98
Chowchilla	.....	9.60
California Pacific.		
Davisville (only established November 1, 1871; two months report only)	.....	12.75

STATIONS.	1870.	1871.
Fairfield (only established November 1, 1871; two months report only)	.....	18.51
San Francisco and Northern Pacific Railroad.		
Petaluma (only established November 1, 1871; two months report only)	.....	15.60
Healdsburg (only established November 1, 1871; two months report only)	.....	23.16

The reports for eighteen hundred and seventy (with the exception of San Francisco and Sacramento) are for the last eleven months only. In regions where snow fell the snow was reduced to a rain basis. Where asterisks are attached, one or more month's reports were mislaid or are wanting.

Nearly all of the railroad stations between Reno and Promontory are on plains, and the rainfall is generally at least one half lighter at them than on the adjacent mountains and valleys.

A more perfect idea of the different climatic elements of certain localities may be obtained from this comparative table of meteorological results in twenty-seven stations in the Pacific States:

STATIONS.	Altitude above the sea, in feet	Latitude	Longitude	TEMPERATURE. Hottest mean day	Coldest mean day	Range	Mean	Annual fall of rain and snow, in inches
		° ′	° ′	°	°	°	° ′	
Fort Yuma	120	32.43	114.36	92.0	56.0	36.0	74.00	3.24
San Diego	150	32.42	117.14	74.0	52.0	22.0	62.00	10.43
Monterey	140	36.36	121.52	59.0	50.0	09.0	55.00	12.20
Fort Miller	402	37.00	119.40	90.0	47.0	43.0	66.00	24.51
San Francisco	22	37.48	122.27	78.0	37.0	41.0	56.40	23.50
Benicia	183	38.08	120.14	80.0	44.0	36.0	59.12	22.86
Sacramento	54	38.31	121.29	94.0	32.0	62.0	60.25	20.06
Marysville	76	39.12	121.42	90.0	38.0	52.0	63.32	.....
Fort Reading	674	40.31	122.05	83.0	44.0	39.0	62.09	29.02
Aurora	7,468	38.19	119.00	82.0	20.0	62.0	52.00	.....
Hope Valley	7,088	38.47	119.54	61.0	11.0	40.0	40.00	.....
Strawberry Valley	5,710	38.49	120.07	69.0	24.0	35.0	51.00	.....
Fort Jones	2,570	41.36	122.52	71.0	31.0	40.0	51.40	16.77
Astoria	50	46.11	123.48	62.0	39.0	23.0	50.20	86.35
Port Orford	50	42.44	124.29	61.0	46.0	15.0	53.62	71.63
Red Dog (Nevada Co.)	2,900	39.18	120.47	.....	.....	.....	.....	83.30
Nevada	2,630	39.18	120.52	72.0	45.0	27.0	55.75	.....
Shingle Springs (El Dorado Co.)	1,450	.....	.....	.....	.....	.....	.....	50.30
Vacaville (Solano Co.)	.....	38.20	122.00	86.0	37.0	49.0	53.25	24.18
Stockton	23	37.37	121.14	91.0	41.0	50.0	66.03	4.75
Niles	87	37.15	121.52	72.0	41.3	30.7	56.06	7.45
Livermore	485	37.27	121.26	86.7	39.0	47.7	62.89	6.20
Chico	150	39.46	121.50	92.3	37.0	55.3	64.67	17.65
Auburn	1,363	38.57	121.02	91.0	34.3	56.7	62.75	17.55
Colfax	2,421	39.03	120.55	91.7	33.3	58.4	62.66	30.80
Reno	4,507	39.31	119.49	82.0	18.0	64.0	50.00	2.31
Santa Barbara	300	34.31	119.38	92.0	42.0	50.0	60.20	15.00

The following complete tables of the rainfall at San Francisco and Sacramento since the American settlement of the State, being representative points of the coast and interior valley climates, are worthy of close study and attention. There appears to be one fact of much value established thereby, viz: that there is a general correspondence between the amount of rain falling before the first of January of each season, and the amount which falls afterwards. Thus, if the rainfall is below the average, as for instance in eighteen hundred and sixty-three and eighteen hundred and sixty-four, before the first of January, it will prove deficient afterwards; and on the other hand, if excessive before the first of January, as in eighteen hundred and sixty-seven and eighteen hundred and sixty-eight, it will maintain the same proportion subsequently. Basing our calculations on this standard, we may then expect, according to the above data, at least six inches more of rain during the balance of the present season, which will bring up the total to twenty-four and a half or twenty-five inches. Our agricultural friends will make a note of this, and regulate their operations accordingly.

RAIN TABLE FOR SACRAMENTO.

Prepared by T. M. LOGAN, M. D., Permanent Secretary of State Board of Health.

Arranged according to the seasons, showing the amount in inches of each month during twenty-three years, and for each rainy season; also the mean quantity for every month, and the mean annual amount of rain.

MONTHS.	1849.....	1850.....	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....
September	0.250	0.000	1.000	0.003	0.000	sprinkle	sprinkle	sprinkle	0.000	sprinkle	0.025	0.063
October	1.500	0.000	0.180	0.000	0.005	1.010	0.000	0.195	0.655	3.010	0.000	0.914
November	2.250	sprinkle	2.140	6.000	1.500	0.050	0.750	0.651	2.466	0.147	6.485	0.181
December	12.500	sprinkle	7.070	13.410	1.540	1.150	2.000	2.396	6.632	4.329	1.834	4.282
	1850.....	1851.....	1852.....	1853.....	1854.....	1855.....	1856.....	1857.....	1858.....	1859.....	1860.....	1861.....
January	4.500	0.650	0.580	3.600	3.250	2.670	4.919	1.575	2.444	0.964	2.310	2.668
February	0.500	0.350	0.120	2.000	8.500	3.400	0.692	4.801	2.461	3.966	0.931	2.920
March	10.000	1.880	6.400	7.000	3.250	4.200	1.403	0.675	2.878	1.637	5.110	3.320
April	4.250	1.140	0.190	3.500	1.500	4.320	2.132	sprinkle	1.214	0.981	2.874	0.475
May	0.250	0.690	0.300	1.450	0.210	1.150	1.841	sprinkle	0.203	1.037	2.491	0.590
June	0.000	0.000	0.000	0.001	0.310	0.010	0.033	0.350	0.098	0.000	0.017	0.135
July	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.030	0.549	0.000
August	0.000	0.000	0.000	0.000	sprinkle	0.000	0.000	sprinkle	sprinkle	0.000	0.900	0.000
Total	36.000	4.710	17.980	36.265	20.065	18.620	13.770	10.443	18.991	16.041	22,626	15.548

RAIN TABLE FOR SACRAMENTO—Continued.

MONTHS.	1861.....	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....	1870.....	1871.....	Mean....
September	0.000	0.000	0.003	0.004	0.080	0.000	0.006	0.000	sprinkle	0.000	0.001	0.062
October	sprinkle	0.355	0.000	0.120	0.480	0.001	0.000	0.000	2.120	0.020	0.210	0.469
November	2.170	0.005	1.490	6.718	2.427	2.426	3.806	0.774	0.850	0.584	1.220	1.982
December	8.637	2.327	1.815	7.867	0.364	9.511	12.850	2.612	1.962	0.971	10.990	5.067
	1862.....	1863.....	1864.....	1865.....	1866.....	1867.....	1868.....	1869.....	1870.....	1871.....	1872.....	
January	15.036	1.733	1.077	4.776	7.699	3.440	6.036	4.790	1.371	2.075	4.040	3.518
February	4.260	2.751	0.186	0.712	2.010	7.104	3.147	3.630	3.276	1.919	.....	2.700
March	2.860	2.360	1.363	0.481	2.018	1.010	4.348	2.942	1.642	0.690	.....	3.058
April	0.821	1.693	1.080	1.370	0.476	1.805	2.306	1.240	2.120	1.454	.....	1.679
May	1.868	0.355	0.742	0.460	2.252	0.008	0.270	0.648	0.270	0.756	.....	0.808
June	0.011	0.000	0.687	0.000	0.100	0.000	sprinkle	0.008	sprinkle	0.001	.....	0.053
July	0.000	0.000	0.000	0.004	0.018	0.000	0.000	0.000	sprinkle	0.000	.....	0.027
August	0.006	0.000	0.085	0.000	0.000	0.000	0.000	0.000	0.001	0.000	.....	0.004
Total	35.549	11.579	7.868	22.512	17.924	25.305	32.769	16.644	13.572	8.470	.....	.....

Maximum quantity of rain in each month, minimum in each month, and average quantity in each month, at Sacramento, since 1849.

	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.
Maximum	15.0 (1852)	8.5 (1854)	10.0 (1849)	4.3 (1855)	2.5 (1850)	0.4 (1857)	0.5 (1860)	0.0	1.0 (1851)	3.0 (1858)	6.7 (1854)	13.4 (1852)
Minimum	0.5 (1852)	0.1 (1852)	0.5 (1865)	0.0 (1857)	0.0 (1857)	0.0	0.0	0.0	0.0	0.0	0.0 (1850)	0.0 (1850)
Mean	3.5	2.7	3.0	1.5	0.8	0.0	0.0	0.0	0.0	0.4	1.9	5.4

RAIN TABLE FOR SAN FRANCISCO.

Prepared by THOMAS TENNENT.

MONTHS.	1849.		1850.		1851.		1852.		1853.		1854.		1855.		1856.		1857.		1858.		1859.	
	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days	Quantity	Days
July															.02	1			.05	2		
August									.04	1	.01	1					.05	2	.16	2	.02	1
September					1.03	1			.46	4	.15	3			.07	2					.03	1
October	3.14	3			.21	2	.80	1	.12	2	2.41	9			.45	5	.93	3	2.74	4	.05	1
November	8.66	8	1.25	6	2.12	5	5.81	12	2.18	12	.34	2	.67	7	2.79	9	3.01	11	.69	5	7.28	15
December	6.20	12	1.05	4	7.10	14	13.20	20	2.32	11	.81	3	5.76	15	3.75	12	4.14	8	6.14	14	1.57	6
	1850.		1851.		1852.		1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.	
January	8.34	15	0.72	5	.58	4	3.92	11	2.88	10	3.67	11	9.40	13	2.45	7	4.36	8	1.28	4	1.64	8
February	1.77	5	0.54	4	.14	4	1.42	5	8.04	16	4.77	10	.50	4	8.59	15	1.83	8	6.32	18	1.60	7
March	4.53	7	1 94	9	6.68	14	4.86	6	3.51	11	4.64	12	1.60	5	1.62	6	5.55	8	3.02	11	3.99	13
April	0.46	3	1.23	8	.26	3	5.37	8	3.12	9	5.00	10	2.94	6			1.55	4	.27	4	3.14	8
May			0.67	3	.32	1	.38	7	.02	1	1.88	6	.76	3	.02	3	.34	3	1.55	4	2.86	11
June									.68	2			.03	1	.12	1	.05	1			.09	2
Total	33.10	53	7.40	39	18.44	48	35.26	70	23.87	79	23.68	67	21.66	54	19.81	61	21.88	56	22.22	68	22.27	73

RAIN TABLE FOR SAN FRANCISCO—Continued.

MONTHS.	1860.		1861.		1862.		1863.		1864.		1865.		1866.		1867.		1868.		1869.		1870.	
	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....	Quantity.....	Days.....
July	.21	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August	.....	.....	.....	.....	.....	.....	.....	.....	.21	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
September	.....	.....	.02	1	.....	.....	.03	1	.01	1	.24	2	.11	2	.04	1	.....	.....	.12	1	.03	1
October	.91	12	.....	.....	.40	2	.....	.....	.13	3	.26	4	.....	.....	.20	1	.15	3	1.29	2	.....	.....
November	.58	3	4.10	12	.15	3	2.55	5	6.68	8	4.19	10	3.35	12	3.41	6	1.18	5	1.19	5	.43	4
December	6.17	21	9.54	16	2.35	9	1.80	8	8.91	18	.58	8	15.16	18	10.69	18	4.34	11	4.31	7	3.38	8
	1861.		1862.		1863.		1864.		1865.		1866.		1867.		1868.		1869.		1870.		1871.	
January	2.47	8	24.36	18	3.63	9	1.83	5	5.14	9	10.88	16	5.16	15	9.50	17	6.35	14	3.89	9	3.07	7
February	3.72	8	7.53	10	3.19	10	.....	.....	1.34	8	2.12	9	7.20	9	6.13	9	3.90	5	4.78	9	3.76	10
March	4.08	8	2.20	11	2.06	8	1.52	9	.74	4	3.04	12	1.58	7	6.30	12	3.14	12	2.00	8	1.29	8
April	.51	4	.73	9	1.61	9	1.57	4	.94	3	.12	1	2.36	8	2.31	9	2.19	5	1.53	4	1.93	5
May	1.00	3	.74	5	.23	2	.78	5	.63	2	1.46	6	.....	.....	.03	2	.08	2	.20	2	.21	3
June	.08	2	.05	1	.....	.....	.....	.....	.....	.....	.04	1	.....	.....	.23	3	.02	1	.....	.....	.....	.....
Total	19.72	70	49.27	83	13.62	52	10.08	37	24.73	59	22.93	69	34.92	71	38.84	78	21.35	58	19.31	47	14.10	46

Average rainfall from the season of 1849-50 to that of 1870-71—twenty-two seasons—23.5 inches.

CENSUS STATISTICS.

CENSUS STATISTICS FOR 1870.

OFFICE UNITED STATES MARSHAL
FOR THE DISTRICT OF CALIFORNIA,
SAN FRANCISCO, December 28, 1871.

HON. I. N. HOAG, *Corresponding Secretary State Board of Agriculture, Sacramento:*

DEAR SIR: In pursuance with your request, I have the honor to forward for publication in your annual report some statistics collated from the late enumeration of the State, prepared under my immediate direction, by my Chief Assistant and Deputy of Statistics, H. C. Bennett, Esquire. It will be observed that the table will be useful for reference.

It is not my purpose now to elaborate at any length upon the agricultural resources of California, or comment to any great extent upon the following figures. Mr. Bennett and myself have now in course of preparation for the press a volume embracing the salient points of the census of eighteen hundred and seventy, wherein our agricultural interests will receive the merit they deserve.

In explanation of the wine product for the year eighteen hundred and seventy, as given in the accompanying table, it is necessary to state that the quantity therein referred to includes only that made by farmers and vinegrowers who make wine on their farms or vineyards. The wine made by those who purchase grapes or crude materials is entered under the head of "Manufactures," as is also spirits made from grape juice. By comparing the quantity of wine made by manufacturers and the quantity of spirits made from grape juice, it will be found that the total quantity of wine made during eighteen hundred and seventy exceeded three million gallons. In addition to the various products enumerated in the table the following items also properly belong to the agricultural products of the State for eighteen hundred and seventy:

Fresno County produced nearly four tons of cotton. San Diego also produced thirty bales, raised by Jonas George.

Yuba produced broom corn to the value of five thousand seven hundred and sixty dollars; Sutter, of the same crop, raised twenty thousand dollars' worth, and Amador twelve thousand dollars; small quantities were also produced in other localities. The value of the broom corn for the year exceeded forty-five thousand dollars.

Yuba County produced nearly six hundred thousand pounds of castor beans, and several other counties produced smaller quantities, the aggregate reaching above seven hundred thousand pounds, valued at four cents per pound, equal to twenty-eight thousand dollars.

Yolo County raised one hundred and thirty-five tons of chicory, valued at twenty thousand dollars; and San Joaquin produced an additional amount—at least five thousand dollars.

Monterey produced one hundred tons of sorghum sugar cane, valued at eighteen hundred dollars.

In Santa Barbara County was gathered nearly forty thousand dollars' worth of wild mustard, whilst several other of the southern counties yielded considerable quantities; and it is estimated the aggregate value of this crop alone reached the astounding figures of sixty thousand dollars.

Monterey County produced twelve thousand seven hundred and forty bushels of English mustard seed, valued at nearly twenty thousand dollars.

Mariposa produced two thousand pounds of mohair from two thousand five hundred Angora goats.

It may be safely estimated that the aggregate value of the marketable crops of all descriptions of agricultural products during eighteen hundred and seventy exceeded the sum of sixty million dollars. This valuation is not based on export values, but on the prices paid to producers.

For instance, the value of the fruits sold, according to the table, was only one million three hundred and ten thousand two hundred and seventeen dollars; but before the fruit reached the consumer the value had more than quadrupled by expenses of transportation, packages, dealers' profits, and agents' commissions.

The statistics given in the table pertaining to the County of Napa are only partial; circumstances beyond the control of the undersigned prevented full justice being done in the enumeration of that county.

Very respectfully, your obedient servant,

WM. GOUVERNEUR MORRIS,
United States Marshal.

THE AGRICULTURAL RESOURCES OF CALIFORNIA.

According to the United States Census for 1870. *By* WILLIAM GOUVERNEUR MORRIS, *U. S. Marshal.* H. C. BENNETT, *Compiler.*

COUNTIES.	No. of Farms.....	LAND.			Value of Farms...	Value of implements.....
		Improved.	Wood.	Unimp'ved.		
		Acres.	Acres.	Acres.		
Alameda	961	185,614	625	36.758	$17,742,570	$201,490
Alpine	58	12,365	1,180	37,114	171,150	7,790
Amador	242	35,109	2,640	18,142	465,900	46,015
Butte	531	166.458	4,967	26,701	2,419,650	104,795
Calaveras	394	40,998	13,642	26,231	221,045	25,340
Colusa	428	222,407	29,795	228,415	4,288,364	142,563
Contra Costa	968	279,690	6,140	17,417	5,008,935	199,630
Del Norte	77	10,056	3,990	7,965	166,450	7,795
El Dorado	712	43,547	30,019	27,076	668,585	24,927
Fresno	181	12,506	30,941	91,775	627,405	91,980
Humboldt	477	80,535	10,307	20,923	1,106,455	55,123
Inyo	77	5,520	.....	7,918	146,180	22,550
Kern	86	9,120	310	244,070	337,850	14,675
Klamath	84	3,379	4,059	5,668	72,475	2,855
Lake	302	17,823	619	110,332	706,250	44,631
Lassen	219	36,823	100	7,992	327,600	27,020
Los Angeles	636	200,993	.....	349,458	3,187,410	66,690
Marin	434	247,581	7,197	22,748	5,417,588	332,515
Mariposa	170	22,905	45,355	15,679	350,400	14,300
Mendocino	481	61,435	14,730	85,605	1,366,643	67,525

Merced	157	474,755	4,138	82,518	2,247,400	70,700
Mono	55	9,290	2,500	11,770	82,000	13,781
Monterey	917	150,677	11,196	661,157	4,891,944	236,261
Napa	282	48,007	1,572	48,480	1,984,190	42,085
Nevada	190	8,026	21,053	8,491	500,750	40,335
Placer	322	70,865	7,283	64,461	991,000	54,160
Plumas	270	66,131	2,160	100	491,830	43,675
Sacramento	1,224	206,578	.....	116,051	5,203,740	219,045
San Bernardino	90	7,129	860	14,504	312,200	12,770
San Francisco	109	3,763	.....	3,786	6,248,000	27,690
San Diego	234	10,257	503	254,162	664,750	23,457
San Joaquin	1,418	437,359	.....	2,410	7,404,891	512,106
San Luis Obispo	329	747,832	6,998	85,188	1,852,848	32,191
San Mateo	447	40,251	14,594	139,072	3,403,016	110,067
Santa Barbara	601	44,286	7,801	1,011,252	5,716,141	104,725
Santa Clara	936	161,405	6,446	128,046	11,940,967	449,604
Santa Cruz	383	38,262	39,911	13,825	1,833,560	37,070
Sierra	89	12,793	2,547	4,270	164,250	14,005
Shasta	181	21,692	6,680	6,973	336,473	31,772
Siskiyou	452	93,707	4,722	29,143	772,805	72,491
Solano	942	352,036	100	11,276	9,885,658	473,420
Sonoma	1,680	335,306	39,136	56,943	9,303,238	418,283
Stanislaus	888	383,383	19,256	139,811	4,197,540	368,142
Sutter	660	192,253	7,338	32,942	1,934,958	120,036
Tehama	345	180,790	2,230	21,568	1,351,965	85,935
Trinity	38	2,266	155	4,430	78,550	9,400
Tulare	367	34,184	1,530	51,156	812,100	92,300
Tuolumne	308	26,770	3,140	13,210	327,400	34,400
Yolo	1,492	303,456	3,837	171,711	9,088,446	298,177
Yuba	451	102,395	28,760	54,038	1,258,102	199,575
Totals	23,375	6,180,768	453,062	4,630,731	$140,075,557	$5,547,467

AGRICULTURAL RESOURCES—Continued.

COUNTIES.	LIVE STOCK.							Value of Live Stock.
	Horses	Mules and Asses	Milk Cows	Work Oxen	Cattle	Sheep	Hogs	
Alameda	8,388	646	3,608	4	4,232	32,236	3,708	$958,443
Alpine	490	15	868	8	1,118	57,165	215	264,700
Amador	1,676	141	1,642	68	2,456	27,180	5,380	284,387
Butte	4,367	335	2,248	80	8,160	76,855	19,044	855,883
Calaveras	1,790	77	2,035	61	1,852	31,934	8,178	332,282
Colusa	5,915	670	2,636	14	19,350	175,953	35,533	1,875,751
Contra Costa	7,702	767	5,281	23	10,291	29,286	8,407	1,006,691
Del Norte	394	37	637	88	883	657	1,359	116,518
El Dorado	2,267	142	4,214	212	5,400	17,938	4,190	475,939
Fresno	3,043	252	1,017	432	14,338	133,851	15,361	690,970
Humboldt	4,268	450	6,044	282	11,603	15,858	10,834	743,001
Inyo	1,514	98	783	110	4,769	521	688	128,273
Kern	1,685	163	628	118	5,627	90,200	753	419,305
Klamath	304	452	378	59	1,546	76	1,102	84,215
Lake	2,287	203	1,965	90	2,518	17,752	12,812	399,610
Lassen	2,035	62	1,699	48	8,082	763	1,581	363,160
Los Angeles	9,032	571	2,214	38	18,823	223,403	5,370	1,091,149
Marin	2,671	115	18,335	244	10,199	2,057	6,606	1,198,486
Mariposa	1,525	187	1,117	127	4,548	21,834	9,191	648,876
Mendocino	4,442	488	3,567	137	7,702	53,291	24,811	670,274
Merced	2,380	670	772	119	48,542	46,625	9,030	1,052,831

Mono	745	36	499	177	2,725	1,601	573	116,545
Monterey	8,140	414	9,537	132	58,729	222,150	15,279	1,984,988
Napa	1,837	327	1,363	96	2,867	6,941	6,204	211,780
Nevada	786	21	1,166	24	1,287	505	1,137	181,520
Placer	1,763	105	1,462	71	2,517	26,631	7,342	332,520
Plumas	1,904	276	3,888	269	8,879	12,043	1,535	632,180
Sacramento	10,198	630	10,800	120	13,291	125,619	15,016	1,761,237
San Bernardino	970	109	625	10	2,488	18,121	1,066	150,480
San Francisco	6,786	108	12,711	3	623	9,173	5,408	1,686,087
San Diego	5,417	734	1,186	821	17,826	13,530	1,489	488,989
San Joaquin	13,026	783	6,906	51	11,768	77,849	27,949	1,591,862
San Luis Obispo	4,296	469	4,825	61	11,944	153,909	3,421	1,068,383
San Mateo	3,823	550	5,315	273	4,520	5,208	5,480	798,078
Santa Barbara	6,442	374	3,673	141	14,055	292,461	4,119	1,400,665
Santa Clara	8,032	278	7,418	392	15,045	11,567	46,947	1,765,871
Santa Cruz	1,724	99	2,187	494	2,589	267	3,425	313,500
Sierra	425	42	846	44	2,298	412	240	107,000
Shasta	1,263	157	1,217	79	2,468	2,754	8,741	225,479
Siskiyou	5,717	867	3,422	199	17,762	21,777	9,052	889,213
Solano	6,852	1,046	4,083	43	8,872	41,900	17,033	1,536,295
Sonoma	11,296	1,109	14,122	397	16,140	61,772	28,358	2,190,444
Stanislaus	10,250	1,119	2,289	17	4,500	109,850	14,551	1,376,243
Sutter	4,043	348	3,372	177	4,053	35,542	10,278	579,954
Tehama	3,983	282	2,557	44	10,598	111,068	20,785	1,016,743
Trinity	176	22	415	30	1,157	130	386	133,908
Tulare	4,599	273	2,182	54	34,374	145,311	15,053	1,200,245
Tuolumne	826	129	2,080	62	1,448	8,900	1,376	227,275
Yolo	9,166	1,314	3,729	48	9,184	72,187	27,409	1,355,537
Yuba	3,551	376	2,915	159	3,782	14,851	15,327	641,796
Totals	206,211	18,938	178,678	6,848	479,828	2,658,554	499,132	$39,825,561

AGRICULTURAL RESOURCES—Continued.

COUNTIES.	GRAIN PRODUCTS OF 1869 AND 1870.					
	WHEAT.	OATS.	BARLEY.	CORN.	RYE.	BU'KWH'T
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Alameda	818,979	64,154	808,175	28,704	46	670
Alpine	1,294	3,113	8,269	308	875	25
Amador	16,678	80	51,915	36,760	310	.....
Butte	727,547	6,140	340,148	16,490	2,520	.....
Calaveras	8,341	100	37,345	4,535	.....	.....
Colusa	700,544	480	395,757	2,330	.....	.....
Contra Costa	924,736	73,055	334,570	280	40	.....
Del Norte	8,023	14,955	6,150	505	.....	85
El Dorado	3,210	260	8,542	589	362	.....
Fresno	18,965	.....	18,875	3,930	305	22
Humboldt	28,287	136,613	32,767	9,902	.....	270
Inyo	13,759	2,175	4,905	22,915	40	50
Kern	13,700	590	26,270	3,575	.....	.....
Klamath	2,360	1,405	550	2,125	865	.....
Lake	85,626	3,884	66,362	11,575	850	200
Lassen	12,975	33,857	103,677	205	40	.....
Los Angeles	4,930	253	118,335	264,175	7,208	200
Marin	57,680	398,744	31,415	320	1,070	680
Mariposa	4,237	590	8,135	455	90	.....
Mendocino	86,676	119,356	65,355	6,628	88	33
Merced	217,912	750	142,446	14,456	.....	.....
Mono	4,144	4,173	12,699	325	27	.....

Monterey	983,239	18,176	639,255	7,431	.....	320
Napa	359,340	3,980	54,790	10,230	1,250	.....
Nevada	585	190	200	306	80	.....
Placer	102,392	2,510	57,421	1,000	1,301	.....
Plumas	15,027	62,709	16,328	190	.....	10
Sacramento	125,852	9,905	662,937	60,310	100	500
San Bernardino	10,181	50	51,906	12,250	20	.....
San Francisco	.....	.....	500	.....	.....	.....
San Diego	24,242	264	14,905	10,214	14	.....
San Joaquin	2,308,935	600	1,067,529	38,555	220	.....
San Luis Obispo	38,594	780	143,824	28,528	10	.....
San Mateo	106,549	292,718	175,577	278	620	400
Santa Barbara	19,051	2,095	194,850	145,442	.....	160
Santa Clara	1,155,869	14,329	391,409	27,970	1,540	.....
Santa Cruz	126,112	46,420	74,321	27,705	.....	815
Sierra	5,304	8,250	10,935	.....	220	.....
Shasta	29,569	2,227	52,836	2,455	143	12
Siskiyou	111,037	129,108	53,428	4,672	1,147	25
Solano	1,956,234	5,442	462,060	3,750	20	3,060
Sonoma	616,126	334,619	194,087	148,212	5,185	840
Stanislaus	1,681,145	.....	630,100	15,700	900	.....
Sutter	618,954	3,450	124,714	25,903	850	.....
Tehama	404,722	3,801	115,412	625	.....	.....
Trinity	9,898	1,635	735	835	20	.....
Tulare	53,505	.....	85,010	9,750	.....	.....
Tuolumne	33,475	.....	16,425	.....	.....	.....
Yolo	2,061,046	1,320	501,952	2,140	.....	4,100
Yuba	147,657	28,027	286,931	33,345	205	.....
Totals	16,865,246	1,837,332	8,703,039	1,048,883	28,581	12,477

AGRICULTURAL RESOURCES—Continued.

COUNTIES.	POTATOES.		GRASS SEED.	TOBACCO.	PEAS AND BEANS.	WOOL.	Value of Fruit sold.	Value of Vegetables sold.....	WINE.
	IRISH.	SWEET.							
	Bushels.	Bushels.	Bushels.	Pounds.	Bushels.	Pounds.			Gallons.
Alameda	108,523	3,705	.....	.....	9,070	120,975	$82,826	$160,176	2,785
Alpine	6,105	.....	.....	.....	.....	281,700	.....	985	.....
Amador	9,896	1,060	.....	.....	16,208	68,500	43,150	11,615	54,123
Butte	2,043	268	.....	.....	615	371,149	34,217	49,450	27,374
Calaveras	6,695	400	.....	.....	4,730	125,110	26,806	25,130	100,260
Colusa	1,708	364	300	1,000	153	1,046,654	4,470	2,066	170
Contra Costa	630	.....	.....	.....	1,430	51,400	15,978	1,550	10,430
Del Norte	20,540	.....	.....	.....	3,471	.....	4,280	1,045	.....
El Dorado	4,148	.....	.....	.....	151	40,560	61,221	14,584	118,941
Fresno	4,318	1,650	.....	40	165	159,664	850	450	.....
Humboldt	483,540	140	97	370	54,446	10,290	25,193	2,220	5
Inyo	6,364	.....	.....	.....	695	.....	300	1,550	.....
Kern	6,050	420	.....	.....	945	281,100	650	1,250	.....
Klamath	9,382	10	.....	.....	943	.....	2,615	3,778	300
Lake	6,133	.....	.....	.....	278	32,197	6,292	6,568	16
Lassen	6,400	.....	.....	.....	.....	75	375	100	.....
Los Angeles	16,182	2,990	.....	150	17,314	852,122	4,555	460	273,235
Marin	83,245	.....	.....	.....	150	6,724	4,420	1,050	800
Mariposa	1,542	100	.....	100	217	29,944	5,485	3,160	5,045
Mendocino	75,683	.....	.....	30	206	174,018	3,935	512	500
Merced	13,830	11,320	.....	.....	1,296	203,072	9,596	4,320	10,815
Mono	5,032	.....	.....	.....	150	7,000	.....	3,880	.....

Monterey	73,590	.....	.....	59,120	125,705	847,705	2,490	1,140	5,200
Napa	2,358	.....	.....	.....	425	18,868	31,928	8,530	56,581
Nevada	5,566	.....	.....	.....	413	.....	30,315	30,370	20,983
Placer	1,768	3,349	.....	.....	260	149,175	33,752	20,695	61,209
Plumas	14,288	.....	83	.....	650	11,949	1,980	1,750	.....
Sacramento	67,113	149,145	.....	.....	18,320	465,858	166,835	43,290	94,833
San Bernardino	1,542	785	.....	.....	419	80,300	5,235	1,600	48,730
San Francisco	7,500	.....	.....	.....	.....	.....	.....	165,618	.....
San Diego	2,677	95	.....	.....	554	4,000	.....	4,625	500
San Joaquin	7,195	2,200	500	.....	765	38,920	20,905	9,700	25,720
San Luis Obispo	5,726	550	.....	.....	16,359	752,673	760	.....	.....
San Mateo	126,225	.....	.....	.....	9,844	.....	1,350	54,050	500
Santa Barbara	31,148	3,109	.....	730	33,250	1,330,930	2,239	4,380	6,050
Santa Clara	31,764	100	.....	.....	10,021	142,200	72,940	109,739	76,150
Santa Cruz	34,688	245	.....	.....	11,384	.....	15,020	5,025	13,750
Sierra	4,370	.....	.....	.....	554	4,000	.....	5,950	700
Shasta	9,748	1,735	44	.....	945	15,820	20,648	15,955	19,287
Siskiyou	25,728	10	36	.....	1,193	19,275	15,440	16,078	825
Solano	3,930	960	.....	1,000	4,495	121,100	126,030	6,665	53,880
Sonoma	367,461	105	76	469	2,616	220,084	150,426	6,874	209,195
Stanislaus	1,750	.....	.....	.....	180	700,663	7,450	3,175	5,140
Sutter	3,512	7,580	.....	.....	5,800	101,281	10,971	6,965	4,045
Tehama	260	350	.....	.....	.....	431,626	10,860	72,650	33,000
Trinity	5,958	.....	.....	.....	388	.....	7,580	9,800	.....
Tulare	8,600	2,100	.....	.....	150	665,045	11,350	390	5,030
Tuolumne	20,675	.....	.....	.....	.....	26,400	59,920	25,185	128,875
Yolo	20,440	3,920	140	.....	6,467	228,620	40,009	83,479	5,910
Yuba	9,565	1,442	.....	.....	3,074	24,328	127,368	19,714	82,943
Totals	1,773,128	200,207	1,276	63,009	366,664	10,263,074	$1,310,217	$919,271	1,508,835

AGRICULTURAL RESOURCES—Continued.

COUNTIES.	DAIRY PRODUCTS.			HAY.	HOPS.	SORGHUM SYRUP.	SILK COCOONS.	FLAX SEED.	CLOVER SEED.	HEMP.
	BUTTER.	CHEESE.	MILK.							
	Pounds.	Pounds.	Gallons.	Tons.	Pounds.	Galls.	Pounds.	Bushels.	Bushels.	Pounds.
Alameda	189,700	430	193,425	20,640	7,010	.....	.....	500	.....	.....
Alpine	20,340	50	275	994	5,000	.....	.....	.....	.....	.....
Amador	43,970	950	1,600	5,894	12,050	.....	.....	.....	.....	.....
Butte	24,645	3,000	13,500	11,761	.....	.....	.....	.....	.....	.....
Calaveras	66,246	3,545	3,982	6,195	200	.....	.....	.....	.....	.....
Colusa	35,852	2,000	36	11,064	.....	3	.....	.....	60	.....
Contra Costa	154,146	60,950	525	18,664	.....	.....	.....	40	.....	.....
Del Norte	35,453	.....	.....	599	.....	.....	.....	.....	.....	.....
El Dorado	220,025	27,891	638	6,213	.....	.....	.....	.....	.....	.....
Fresno	5,659	1,050	130	1,746	.....	.....	.....	.....	.....	.....
Humboldt	107,490	850	.....	6,133	.....	.....	.....	405	50	.....
Inyo	20,940	200	1,700	1,456	.....	200	.....	.....	.....	.....
Kern	3,150	.....	1,000	1,643	.....	.....	.....	.....	.....	.....
Klamath	6,405	.....	146	689	.....	.....	.....	.....	.....	.....
Lake	83,278	63,340	339	5,074	.....	.....	.....	.....	.....	200
Lassen	65,864	1,700	.....	8,835	.....	.....	.....	.....	.....	.....
Los Angeles	25,881	300	.....	10,864	.....	.....	30	.....	39	.....
Marin	2,003,314	310,100	58,400	11,892	.....	.....	.....	.....	.....	.....
Mariposa	9,370	.....	2,050	2,513	20	.....	.....	.....	.....	.....
Mendocino	57,842	330	.....	8,372	59,400	.....	.....	.....	.....	.....
Merced	232,530	229,998	199	8,085	.....	.....	60	.....	.....	.....
Mono	32,885	4,100	.....	2,609	.....	.....	.....	.....	.....	.....

Monterey	425,385	1,027,355	1,360	20,106	30,000	.....	10	1,408	.....	.....
Napa	46,240	1,000	.....	6,555	.....	.....	.....	.....	.....	.....
Nevada	50,491	1,600	50,390	4,684	1,900	.....	167	.....	.....	.....
Placer	72,125	880	10,725	6,746	.....	.....	.....	.....	96	50
Plumas	237,425	.....	1,975	15,725	.....	.....	.....	.....	.....	.....
Sacramento	369,635	97,020	133,100	24,463	235,000	.....	200	1,800	590	78,000
San Bernardino	21,510	3,400	.....	1,808	12	.....	.....	.....	70	.....
San Francisco	.....	.....	2,546,915	1,730	.....	.....	.....	.....	.....	.....
San Diego	9,678	1,100	100	2,339	.....	.....	.....	.....	.....	.....
San Joaquin	305,868	20,000	161,000	53,586	3,100	.....	.....	.....	.....	.....
San Luis Obispo	156,335	291,659	18,000	5,573	.....	.....	.....	.....	.....	.....
San Mateo	286,610	465,695	635,235	18,287	20,000	.....	.....	48,890	.....	.....
Santa Barbara	160,380	36,150	14,115	7,682	1,800	.....	200	2,725	.....	.....
Santa Clara	174,391	549,290	126,265	46,060	94,000	130	.....	.....	.....	.....
Santa Cruz	94,655	120,220	1,400	9,325	.....	.....	.....	1,338	.....	.....
Sierra	10,078	1,100	100	2,359	.....	.....	.....	.....	.....	.....
Shasta	30,150	2,190	1,205	5,032	1,000	.....	.....	5	.....	.....
Siskiyou	101,555	2,000	1,046	12,654	.....	.....	.....	.....	.....	.....
Solano	118,969	4,000	102,800	36,739	50	.....	.....	1,400	.....	.....
Sonoma	1,095,679	253,700	63,440	34,258	10,382	.....	5	12	.....	.....
Stanislaus	53,125	.....	2,190	15,162	.....	.....	.....	.....	.....	.....
Sutter	111,375	.....	25,550	21,016	.....	.....	.....	.....	44	.....
Tehama	68,185	.....	8,000	6,434	140	.....	.....	.....	.....	.....
Trinity	7,320	200	250	740	.....	.....	.....	.....	.....	.....
Tulare	37,840	200	.....	4,421	.....	.....	.....	.....	.....	.....
Tuolumne	139,785	400	.....	10,540	.....	.....	.....	.....	.....	.....
Yolo	194,719	18,750	77,300	27,360	3,200	.....	762	.....	258	.....
Yuba	99,930	8,280	32,032	14,516	30,060	.....	.....	.....	.....	.....
Totals	8,024,423	3,306,873	3,292,438	567,835	514,324	333	1,434	58,523	1,207	78,250

AGRICULTURAL RESOURCES—Concluded.

COUNTIES.	HONEY.	WAX.	Value of Forest Products sold....	Value of Farm Manufactures....	Value of Animals sold for Slaughter.....	Wages paid for Labor.....	Value of Crop and Improvements for 1870...
	Pounds.	Pounds.					
Alameda	150	.....	.....	.....	$68,800	$517,619	$2,239,775
Alpine	75	.....	.....	.....	10,042	35,710	165,490
Amador	2,520	.....	$6,215	$26,925	56,621	56,860	275,025
Butte	3,200	.....	2,925	104,850	66,524	279,060	1,442,696
Calaveras	6,550	606	25,019	.....	47,327	61,903	460,345
Colusa	2,671	200	66,022	500	540,499	381,852	1,900,005
Contra Costa	4,887	217	252	.....	41,336	398,670	1,348,106
Del Norte	2,195	.....	.....	25	12,879	17,695	50,092
El Dorado	1,670	.....	29,482	10,450	53,569	95,462	492,618
Fresno	6,150	150	.....	.....	81,443	87,780	214,171
Humboldt	1,430	.....	8,401	5,373	132,056	96,208	544,064
Inyo	.....	.....	.....	.....	32,241	38,880	157,241
Kern	2,400	.....	.....	2,300	53,800	45,210	195,725
Klamath	380	50	.....	.....	14,227	13,475	254,271
Lake	8,945	25	120	.....	66,928	47,744	322,810
Lassen	.....	.....	.....	.....	25,916	44,226	266,300
Los Angeles	75,590	200	.....	.....	44,612	142,160	631,163
Marin	.....	.....	16,165	1,200	148,122	402,020	1,625,166
Mariposa	.....	.....	920	2,920	41,747	31,750	137,500
Mendocino	.....	.....	.....	.....	144,974	77,095	593,513
Merced	850	450	1,125	7,220	891,783	174,587	742,669
Mono	50	.....	.....	.....	17,116	25,547	89,272

Monterey	12,557	1,630	2,800	3,000	439,529	508,742	1,668,751
Napa	500	30	9,720	764	53,359	130,234	434,441
Nevada	760	20	65,370	16,955	9,020	54,835	374,505
Placer	5,335	124	26,435	24,990	62,294	119,730	1,191,450
Plumas			1,110		103,965	115,981	377,823
Sacramento	16,485	906	6,465	900	77,078	499,201	1,889,919
San Bernardino	17,880	729	1,600		6,820	21,690	133,140
San Francisco						137,631	729,465
San Diego	818				32,415	53,322	202,424
San Joaquin	5,230		53,375		177,231	741,637	4,487,970
San Luis Obispo	7,035	147			249,915	194,987	759,681
San Mateo	1,050		37,470		101,598	361,941	1,018,560
Santa Barbara	3,915	155	9,185	14,400	135,511	180,222	900,187
Santa Clara	1,920	10	34,310	11,845	166,882	979,264	2,546,715
Santa Cruz	1,025		3,760		49,745	86,580	336,245
Sierra	818				32,778	53,897	205,449
Shasta	10,980	85		155	55,542	38,631	298,697
Siskiyou	6,770	100			75,323	128,870	692,319
Solano	4,390				147,713	547,141	3,015,235
Sonoma	5,176	87	81,486	25,110	325,563	549,865	2,251,265
Stanislaus	6,050		5,025		199,146	789,807	2,611,906
Sutter	700		18,851		53,215	241,192	958,274
Tehama	820	100	7,200		194,075	205,495	920,857
Trinity	100	40		200	12,081	24,272	89,115
Tulare	5,250				298,330	71,850	803,160
Tuolumne	3,900		13,450		26,270	29,650	217,000
Yolo	14,340	150	21,835	1,700	110,281	478,084	3,061,416
Yuba	3,275	159	10,027	753	117,123	233,375	798,717
Totals	260,806	6,371	$566,120	$262,735	$5,905,364	$10,649,639	$46,932,703

POPULATION OF CALIFORNIA, BY COUNTIES.

Official Statement of the Population of the State of California, by Counties, and San Francisco, by Wards, according to the Ninth Census. Furnished, with the compliments of the United States Marshal, to the State Board of Agriculture.

Counties.	Popul'n.	Counties.	Popul'n.
Alameda	24,237	Placer	11,357
Alpine	685	Plumas	4,489
Amador	9,582	Sacramento	26,830
Butte	11,403	San Bernardino	3,988
Calaveras	8,895	San Diego	4,951
Colusa	6,165	San Francisco	149,473
Contra Costa	8,461	San Joaquin	21,050
Del Norte	2,022	San Luis Obispo	4,772
El Dorado	10,309	San Mateo	6,635
Fresno	6,336	Santa Barbara	7,784
Humboldt	6,140	Santa Clara	26,246
Inyo	1,956	Santa Cruz	8,743
Kern	2,925	Shasta	4,173
Klamath	1,674	Sierra	5,619
Lake	2,969	Siskiyou	6,848
Lassen	1,327	Solano	16,871
Los Angeles	15,309	Sonoma	19,819
Marin	6,903	Stanislaus	6,499
Mariposa	4,572	Sutter	5,030
Mendocino	7,545	Tehama	3,587
Merced	2,807	Trinity	3,213
Mono	430	Tulare	4,521
Monterey	9,876	Tuolumne	8,150
Napa	7,163	Yolo	9,899
Nevada	19,134	Yuba	10,851
		Total	560,223

Population of San Francisco, by Wards.

Wards.	Popul'n.	Wards.	Popul'n.
First Ward	10,767	Seventh Ward	10,379
Second Ward	11,831	Eighth Ward	16,503
Third Ward	2,964	Ninth Ward	10,689
Fourth Ward	16,555	Tenth Ward	22,325
Fifth Ward	2,813	Eleventh Ward	22,666
Sixth Ward	9,400	Twelfth Ward	12,581
		Total	149,473

Office U. S. Marshal for the District of California,
San Francisco, January 1st, 1872.

I hereby certify that the foregoing table is a true copy of the official returns of the population of the State of California as furnished me from the office of the Superintendent of Census at Washington.

WILLIAM GOUVERNEUR MORRIS,
United States Marshal.

STATISTICAL TABLES FOR 1870-71.

AS REPORTED TO THE SECRETARY OF THE STATE BOARD OF AGRICULTURE BY THE STATE SURVEYOR GENERAL.

TABLE OF STATISTICS FOR 1870-71.

Industrial and other statistical information for the years 1870-71, *as reported to the Surveyor General by the several County Assessors, embracing the entire State, with the exception of the Counties of Butte, Marin, and Shasta, which have not sent in their reports.*

COUNTIES.	Acres of Land Inclosed.....	Acres of Land Cultivated.....	WHEAT.		BARLEY.		Acres of Land Cultivated in 1871.....	Acres Wheat sown in 1871..	Acres of Barley sown in 1871.....
			Acres ...	Bushels..	Acres ...	Bushels..			
Alameda	92,716	121,240	58,712	983,946	39,210	613,940	121,240	53,540	42,500
Alpine	20,000	2,030	30	600	100	2,500	2,030	30	100
Amador	62,340	17,060	2,300	35,400	2,300	44,300	15,371	2,040	2,170
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	46,009	13,600	775	6,215	1,300	1,730	1,668	300	1,368
Colusa.....	200,000	86,000	50,000	750,000	25,000	500,000	.....	.....	.....
Contra Costa.....	125,620	79,810	51,155	750,940	154,020	340,360	69,790	51,140	15,400
Del Norte.....	10,320	2,479	301	5,740	124	3,990	1,975	256	276
El Dorado	87,581	14,932	790	832	271	2,846	14,834	820	265
Fresno	63,145	11,925	5,180	28,050	4,610	39,540	15,340	7,420	6,585
Humboldt.....	42,820	13,855	1,232	37,967	740	29,410	14,240	1,265	650
Inyo	26,050	4,500	600	25,000	800	30,000	5,000	700	950
Kern	7,000	5,000	1,300	40,000	2,000	50,000	5,000	1,300	2,000
Klamath	6,000	2,500	200	5,000	300	4,000	.....	.....	.....
Lake	41,590	10,342	4,880	96,088	2,769	63,545	12,427	5,591	3,068
Lassen	22,676	7,042	713	12,167	3,588	82,934	7,067	858	4,226
Los Angeles.....	27,300	45,700	300	9,000	9,700	291,000	44,000	300	12,000
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	25,100	6,000	800	5,000	2,035	6,000	.....	.....	.....
Mendocino.....	250,000	180,000	30,700	431,000	10,000	200,000	249,000	31,000	9,000

Merced	250,000	300,600	200,000	1,000,000	100,000	800,000	300,000	200,000	100,000
Mono	5,160	1,480	312	3,980	674	15,600	1,560	356	710
Monterey	218,573	109,354	68,327	1,093,400	34,412	929,084	117,075	54,210	48,378
Napa	105,500	40,705	33,900	576,300	3,720	81,840	40,490	32,450	3,640
Nevada	46,000	12,600	600	.....	900	.....	12,600	600	700
Placer	85,896	32,735	7,851	101,802	5,183	57,400	33,846	.....	.....
Plumas	37,565	3,685	880	13,589	746	14,231	3,685	933	811
Sacramento	279,013	70,232	7,114	104,403	32,440	604,403	70,511	13,127	30,903
San Bernardino	21,000	17,600	3,200	24,000	6,700	90,000	17,600	3,000	13,200
San Diego	7,000	4,500	3,000	15,000	1,200	6,000	4,500	3,000	1,200
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	275,000	120,000	70,000	774,200	20,000	305,600	150,000	80,000	20,000
San Luis Obispo	60,000	10,000	3,000	60,000	3,000	60,000	20,000	8,000	8,000
San Mateo	155,000	89,000	17,000	490,000	18,500	580,000	90,000	16,500	17,000
Santa Barbara	50,759	95,838	10,901	9,500	30,968	619,567	65,515	6,000	50,997
Santa Clara	495,273	156,220	98,445	1,225,790	13,670	295,260	165,000	103,500	12,700
Santa Cruz	66,215	23,319	6,360	132,410	4,252	151,205	22,653	4,153	3,211
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	22,310	2,560	945	13,441	860	19,022	.....	.....	.....
Siskiyou	67,620	46,740	9,840	135,800	2,400	58,200	.....	.....	.....
Solano	304,921	285,276	134,812	2,089,686	15,869	466,070	341,000	190,000	10,500
Sonoma	460,180	250,585	135,520	2,167,250	17,320	230,927	252,570	138,150	16,350
Stanislaus	75,000	300,400	260,000	1,240,000	45,000	540,000	345,000	275,000	48,000
Sutter	171,967	104,925	45,386	633,295	14,982	404,457	110,151	47,635	15,731
Tehama	130,000	43,500	25,210	609,000	11,000	211,000	122,000	24,176	10,000
Trinity	12,360	4,640	1,000	15,000	120	1,800	3,216	1,000	120
Tulare	33,685	25,000	3,395	23,960	5,000	133,150	26,000	5,589	10,500
Tuolumne	152,500	19,500	550	11,000	500	10,000	.....	.....	.....
Yolo	136,367	144,041	102,179	1,384,300	33,155	292,460	144,041	102,179	33,155
Yuba	102,810	53,000	9,193	118,483	14,563	286,950	54,500	10,125	11,774
Totals	4,982,942	2,992,050	1,478,891	17,288,534	696,001	9,570,321	3,083,495	1,476,243	568,138

TABLE OF STATISTICS—Continued.

COUNTIES.	OATS.		RYE.		CORN.		BUCKWHEAT.		PEAS.	
	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....	Acres.....	Bushels.....
Alameda	4,300	110,290	115	2,309	530	12,960	15	210	200	2,600
Alpine	200	4,000	3	50	20	600	.....	.....	4	100
Amador	60	1,600	.....	.....	870	26,300	4	100	2	110
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	19	72	14	158	280	6,980	.....	.....	.....	.....
Colusa	400	8,000	.....	.....	300	6,000	.....	.....	.....	.....
Contra Costa	2,000	49,420	700	1,940	190	3,890	20	400	25	490
Del Norte	493	18,520	.....	.....	14	410	5	150	113	3,180
El Dorado	182	1,326	134	1,031	112	2,070	.....	.....	.....	.....
Fresno	27	744	60	775	667	13,970	.....	.....	4½	130
Humboldt	3,812	228,175	10	500	240	9,742	3	80	1,080	63,540
Inyo	275	850	.....	.....	2,500	7,500	5	100	10	175
Kern	50	1,000	20	300	590	2,360	5	50	3	60
Klamath	200	2,700	.....	.....	100	2,000	.....	.....	50	1,500
Lake	235	5,600	9	95	467	7,837	.....	.....	.....	.....
Lassen	1,278	34,864	36	734	21	812	.....	.....	.....	.....
Los Angeles	350	.....	75	2,250	10,200	479,400	70	2,100	57	1,425
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	300	.....	30	.....	50	600	.....	.....	3	100
Mendocino	40,000	2,100,000	.....	.....	250	5,000	.....	.....	200	4,000

Merced	300	9,000	.....	.....	400	12,000	.....	.....	.....	.....
Mono	208	5,601	.....	.....	8	92	.....	.....	.....	.....
Monterey	310	9,200	20	500	200	6,150	15	290	200	3,850
Napa	795	23,850	40	400	1,395	41,850	.....	.....	5	110
Nevada	3,400	.....	400	1,000	200	.....	40	.....	.....	.....
Placer	677	2,490	410	1,457	20	200	.....	.....	.....	.....
Plumas	1,411	41,775	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento	1,201	27,656	46	760	2,491	79,405	50	1,536	6	256
San Bernardino	.....	.....	.....	.....	2,600	65,000	.....	.....	.....	.....
San Diego	.....	.....	.....	.....	300	6,000	.....	.....	10	100
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	2	260	50	400	700	18,200	4	80	10	400
San Luis Obispo	.....	.....	.....	.....	500	16,000	.....	.....	100	4,000
San Mateo	14,800	320,200	50	875	160	.....	.....	.....	240	.....
Santa Barbara	515	4,058	.....	.....	20,715	347,500	.....	.....	159	400
Santa Clara	3,300	75,800	750	5,275	627	14,670	20	200	155	4,000
Santa Cruz	2,299	93,718	80	1,250	1,174	33,690	35	440	.....	.....
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	515	11,785	11	250	.....	.....	.....	.....	.....	.....
Siskiyou	3,200	76,840	17	460	100	3,300	5	114	5	200
Solano	1,840	45,200	146	2,920	1,050	15,169	500	7,500	30	1,500
Sonoma	22,210	360,350	200	3,256	3,580	105,200	7	129	26	1,040
Stanislaus	.....	.....	.....	.....	340	8,900	.....	.....	.....	.....
Sutter	609	12,371	266	800	914	25,360	.....	.....	.....	.....
Tehama	120	700	.....	.....	140	2,500	.....	.....	4	40
Trinity	100	1,500	.....	.....	40	1,000	.....	.....	.....	.....
Tulare	80	730	.....	.....	1,001	15,680	.....	.....	.....	.....
Tuolumne	200	3,000	.....	.....	110	2,750	.....	.....	.....	.....
Yolo	25	.....	.....	.....	100	2,850	.....	.....	.....	.....
Yuba	971	22,230	.....	.....	798	23,420	.....	.....	30	800
Totals	113,269	3,714,480	3,692	29,795	57,364	1,434,317	803	13,479	2,726½	94,106

TABLE OF STATISTICS—Continued.

COUNTIES.	PEANUTS.		BEANS.		CASTOR BEANS.		POTATOES.		SW'T POTATOES.	
	Acres.	Pounds.	Acres.	Bushels.	Acres.	Pounds.	Acres.	Bushels.	Acres.	Bushels.
Alameda			650	6,430			1,300	81,800		
Alpine			5	150			75	2,560		
Amador			5	270			200	6,030	5	640
Butte										
Calaveras										
Colusa			4	120			30	2,000	10	600
Contra Costa			210	4,200			100	16,960	.5	500
Del Norte			3	52			123	15,905		
El Dorado			10	162			182	1,682		
Fresno			11	130			100	47,690	7	1,210
Humboldt			3	91			3,467	1,141,100		
Inyo	1	250	20	175			40	6,000		
Kern	3	3,000	30	1,200			110	5,500	11	660
Klamath			50	1,500			100	3,000		
Lake							20	1,520		
Lassen			3	54			36	4,854		
Los Angeles	89	81,800	1,200	24,000	110	110,000	1,400	120,400	110	8,250
Marin										
Mariposa			5	150			60	2,700		
Mendocino							2,000	80,000		

Merced			50	2,500			50	2,500	30	1,500
Mono			1	20			91	4,476		
Monterey			690	20,620			2,015	141,220		
Napa			6	170			30	3,400		
Nevada							180	3,400		
Placer							113	4,072	122	3,345
Plumas							68	5,085	2	515
Sacramento	10	17,760	406	13,110			752	99,016	673	117,682
San Bernardino			45	1,800			50	5,000	20	1,500
San Diego	2	1,000	100	2,000			75	3,750	10	200
San Francisco										
San Joaquin	1	450	65	1,820			200	1,400	10	1,250
San Luis Obispo			800	8,000			6,000	60,000		
San Mateo			1,200				6,800	640,000		
Santa Barbara			15,607	365,040	125	4,325	1,020	3,905	316	3,059
Santa Clara			850	16,225			1,470	106,500		
Santa Cruz			357	6,214			496	52,018	11½	2,383
Shasta										
Sierra							89	8,410		
Siskiyou	1	400	20	510			600	78,000	2	120
Solano	5	1,680	275	5,500	50		300	12,690	25	725
Sonoma	5	4,200	35	656			4,500	250,000	15	3,000
Stanislaus			13	650						
Sutter	1	700	50	1,660	138	13,000	17	1,209	68	13,090
Tehama	180	42,564	8	800			60	1,005	8	3,176
Trinity			30	500			120	12,000		
Tulare			38	1,037			47	15,600	15	3,000
Tuolumne			250	2,200			210	15,000		
Yolo	40	38,000	312	12,480			105	12,480	45	5,400
Yuba	2	1,500	40	1,000	555	555,000	130	10,400	18	1,600
Totals	340	193,304	23,457	503,201	978	682,325	34,931	3,092,177	1,536½	173,405

TABLE OF STATISTICS—Continued.

COUNTIES.	ONIONS.		HAY.		FLAX.		HOPS.		TOBACCO.		BEETS.
	Acres	Bushels	Acres	Tons	Acres	Pounds	Acres	Pounds	Acres	Pounds	Tons
Alameda	200	22,460	7,000	11,600	320	61,200	9	3,300			1,950
Alpine			1,000	1,000							20
Amador	3	240	4,000	3,340			7	4,300			10
Butte											
Calaveras											2
Colusa	5	250	10,000	10,000							10
Contra Costa	30	3,820	13,900	18,650	3	2,900					2,000
Del Norte	1	40	628	1,199							9
El Dorado			5,223	4,875							
Fresno	4	340	3,640	2,555							30
Humboldt	2	180	2,950	5,967							210
Inyo	10	375	10,000	20,000							5
Kern	12	900	800	1,200				25	1	300	50
Klamath	10	300	1,200	4,800							
Lake	1	155	4,561	6,475							9
Lassen	3½	447	3,514	5,652							26
Los Angeles	73	9,100	2,800	7,700	1		35	19,400	60	45,200	150
Marin											
Mariposa	5	400	6,000	10,000							5
Mendocino			75,000	137,000			150	20,000			

Merced	10	500	2,000	2,500							
Mono	4½	173	1,580	1,940							4
Monterey	350	14,200	450	720	1,250	286,200	78	1,450	44	18,270	45
Napa	3	375	8,115	11,270			14	27,000			100
Nevada	25		8,000	10,000							40
Placer			6,471	6,665							
Plumas	6	240	12,030	12,865							19
Sacramento	171	26,473	25,872	24,716	15	12,000	179	274,400			232
San Bernardino	25	1,250	1,240	2,500							20
San Diego	5	250	300	600							250
San Francisco											
San Joaquin	20	4,240	12,000	8,760			14	8,000			50
San Luis Obispo	10		4,000	8,000							50
San Mateo	80	60,600	15,000	24,000	350						2,000
Santa Barbara	101	800	10,950	25,627	4,000	365,900					619
Santa Clara	975	85,350	15,670	25,340			67	16,950	40	3,300	2,075
Santa Cruz			3,310	6,146	1,112	Seed.	20				30
Shasta											
Sierra			6,820	7,110							7
Siskiyou	12	3,100	68,000	120,000							8
Solano	15	450	14,690	21,345	325	32,500					196
Sonoma	16	2,000	25,250	43,600							3,850
Stanislaus			8,000	7,800							
Sutter	1	40	11,077	12,247							
Tehama	4	950	5,100	6,940							4
Trinity	6	600	1,200	1,800							
Tulare			1,946	2,000							55
Tuolumne	75	7,500	12,000	14,500							
Yolo	18	1,260	13,490	14,745							100
Yuba	20	3,600	12,941	9,700			32	30,000			30
Totals	2,302	252,358	460,018	685,449	7,376	760,700	604	404,825	145	67,070	14,270

TABLE OF STATISTICS—Continued.

COUNTIES.	Tons of turnips	Tons of pumpkins and squashes	COTTON. Acres	COTTON. Pounds	Pounds of silk cocoons	Acres of broomcorn	Pounds of butter	Pounds of cheese	Pounds of wool	Pounds of honey
Alameda	85	2,090					80,410	6,570	230,600	2,960
Alpine	25	30								
Amador		30			130	160	34,300	2,000	14,000	1,400
Butte										
Calaveras	2	18			20		20,110	12,000	513,000	11,200
Colusa		50				50	30,000		1,000,000	25,000
Contra Costa	710	1,600					220,940	41,676	130,260	8,900
Del Norte	27	15					42,600	300	2,850	2,050
El Dorado					30		137,333	16,970	15,729	3,268
Fresno	10	155					20,975	1,300	492,200	11,180
Humboldt	28						73,120	1,256	43,230	2,800
Inyo	3	20					4,000		5,000	300
Kern	50	1,000				3	6,000	1,000	814,586	6,000
Klamath							3,000			478
Lake	23	221					30,896	65,600	56,488	6,245
Lassen	6	47					40,216	3,840	1,568	
Los Angeles	15	3,100			3,300	76	33,200	9,700	1,570,000	168,000
Marin										
Mariposa	12	10					8,000	500	75,000	
Mendocino		1,000					117,600	9,800	274,000	

Merced	.....	400	100	.....	.....	.....	5,000	3,000	.....	500
Mono	7	5	.....	.....	.....	.....	4,190	2,720	.....	.....
Monterey	30	415	.....	.....	.....	.....	108,780	1,793,800	594,587	82,800
Napa	30	300	.....	.....	100	5	180,000	8,200	25,300	3,800
Nevada	15	25	.....	.....	700	45	7,300	1,200	.....	2,300
Placer	.....	80	.....	.....	.....	10	11,390	938	151,420	7,609
Plumas	9	8	.....	.....	.....	.....	170,950	1,400	10,042	1,685
Sacramento	154	2,202	.....	.....	935	467	229,205	73,300	323,330	12,440
San Bernardino	.....	825	.....	.....	.....	18	28,200	3,250	98,540	21,600
San Diego	75	300	.....	.....	.....	.....	5,600	.....	150,000	4,500
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	20	135	.....	.....	24	.....	200,000	15,000	241,000	2,000
San Luis Obispo	500	.....	.....	.....	.....	.....	500,000	500,000	350,000	.....
San Mateo	.....	150	.....	.....	.....	.....	210,000	230,000	.....	1,200
Santa Barbara	105	2,850	.....	.....	260	.....	9,056	25,000	1,291,306	10,600
Santa Clara	100	3,290	.....	.....	300	.....	425,300	2,375,440	50,000	6,275
Santa Cruz	.....	2,359	.....	.....	10	.....	60,052	31,366	.....	830
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	18	9	.....	.....	.....	.....	72,300	14,000	1,200	3,100
Siskiyou	34	56	.....	.....	.....	.....	75,580	16,700	56,000	4,000
Solano	47	75	.....	.....	.....	.....	36,721	12,640	221,000	1,025
Sonoma	300	5,000	.....	.....	.....	.....	850,250	200,250	256,832	1,850
Stanislaus	.....	.....	.....	.....	.....	.....	5,000	.....	950,000	19,000
Sutter	.....	442	.....	.....	.....	622	48,963	.....	43,954	180
Tehama	6	10	.....	.....	.....	80	29,000	2,150	992,783	2,460
Trinity	.....	10	.....	.....	.....	.....	15,075	.....	.....	1,500
Tulare	8	195	.....	.....	.....	5	10,525	.....	975,000	18,900
Tuolumne	100	.....	.....	.....	.....	.....	21,000	.....	.....	1,000
Yolo	40	356	.....	.....	6,000	.....	107,500	.....	201,425	4,650
Yuba	40	350	.....	.....	65	155	90,000	5,400	70,000	3,200
Totals	2,644	29,243	100	.....	11,874	1,696	4,419,627	5,488,266	12,292,230	468,185

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of apple trees.	Number of peach trees.	Number of pear trees.	Number of plum trees.	Number of cherry trees.	Number of nectarine trees	Number of quince trees.	Number of apricot trees.	Number of fig trees	Number of lemon trees.
Alameda	88,700	12,900	33,400	20,750	29,200	1,150	2,110	3,780	1,340	88
Alpine	100	50	.....	.....	.....	.....	.....	.....	.....	.....
Amador	31,300	18,300	6,000	5,400	2,300	980	2,100	1,850	1,300	130
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	30,000	16,400	5,360	3,110	1,166	728	52	11	400	10
Colusa	40,000	50,000	4,000	2,500	800	1,000	300	950	675	10
Contra Costa	35,200	18,800	8,720	3,500	3,100	290	1,610	740	700	35
Del Norte	9,556	190	474	439	300	15	23	7	4	6
El Dorado	90,741	40,973	11,426	6,532	2,914	713	1,014	602	921	.....
Fresno	1,865	2,937	442	318	93	80	35	175	225	.....
Humboldt	49,420	556	1,015	2,044	1,336	.....	55	25	5	.....
Inyo	550	700	125	75	28	50	15	35	10	.....
Kern	500	800	150	300	110	80	55	300	240	15
Klamath	4,700	2,000	400	500	270	93	65	42	.....	.....
Lake	11,143	6,002	1,791	2,431	362	87	126	194	158	.....
Lassen	5,512	2,617	358	474	64	38	127	196	.....	.....
Los Angeles	7,100	11,100	5,200	200	150	400	1,100	1,850	2,000	3,700
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	6,000	6,800	900	400	200	100	100	400	300	.....
Mendocino	25,000	22,000	3,000	2,100	640	370	180	70	.....	.....

Merced	4,200	7,422	3,271	2,144	602	576	247	972	481	10
Mono	650	112	6	100	.....	.....	.....	.....	.....	.....
Monterey	31,740	13,517	19,970	31,220	1,185	561	93	1,182	201	47
Napa	59,465	26,310	17,870	6,410	10,470	855	1,430	1,895	830	24
Nevada	24,500	12,875	3,806	2,566	1,578	780	540	1,180	860	15
Placer	55,971	35,864	19,871	11,773	5,783	3,410	2,170	271	1,998	40
Plumas	3,781	567	337	155	55	15	27	7	.....	.....
Sacramento	92,329	95,238	32,823	19,632	7,725	3,988	3,841	12,697	4,257	575
San Bernardino	8,200	14,320	795	1,430	110	385	294	830	640	415
San Diego	4,900	2,900	530	475	395	200	280	315	385	290
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	47,000	30,000	9,000	6,000	1,250	1,000	1,000	2,750	3,500	12
San Luis Obispo	2,000	2,000	1,000	300	100	50	300	300	350	50
San Mateo	15,000	1,500	1,500	1,000	1,200	1,000	560	1,000	50	10
Santa Barbara	26,016	13,000	9,315	1,000	3,008	1,017	3,400	4,901	8,400	1,200
Santa Clara	1,107,840	83,650	75,260	25,890	20,430	1,580	7,980	8,650	1,700	25
Santa Cruz	50,669	5,880	4,914	4,727	2,503	109	530	841	291	25
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	7,810	5,100	981	389	390	87	107	40	11	2
Siskiyou	37,500	15,840	2,080	1,600	1,240	512	500	312	44	.....
Solano	29,461	22,681	12,641	5,721	4,820	350	304	12,964	4,297	27
Sonoma	260,320	50,500	14,250	38,760	7,856	985	3,408	1,420	1,395	.....
Stanislaus	3,450	6,080	890	675	190	95	75	450	560	.....
Sutter	19,299	11,784	4,392	4,620	595	1,123	779	4,983	2,924	21
Tehama	11,054	26,040	9,412	10,150	804	752	413	722	716	8
Trinity	17,930	7,000	1,575	980	400	116	130	76	.....	.....
Tulare	22,250	75,559	5,867	1,176	342	397	687	1,355	1,868	374
Tuolumne	5,300	4,800	4,600	3,100	2,250	1,750	1,450	950	2,200	150
Yolo	23,638	34,942	7,675	3,942	2,647	1,023	885	3,526	3,070	17
Yuba	37,863	26,715	8,860	5,950	1,883	2,220	2,900	4,550	2,300	60
Totals	2,446,523	835,321	356,252	243,058	122,864	31,110	43,397	78,238	51,606	7,381

TABLE OF STATISTICS—Continued.

COUNTIES.	Number of orange trees	Number of olive trees	Number of prune trees	Number of mulberry trees	Number of almond trees	Number of walnut trees	Number of gooseberry bushes	Number of raspberry bushes	Number of strawberry vines	Number of grape vines
Alameda	64	380	4,730	940	7,380	1,750	49,900	716,400	6,110,500	138,200
Alpine							5,000	2,000		
Amador	120	25	260	340	1,650	400	9,009	14,300	109,000	1,190,000
Butte										
Calaveras	28	2	45	700	100	903	3,300	2,500	300,000	368,000
Colusa	20			100	550	175	75	260	400	125,000
Contra Costa	80	100	120	7,850	340	2,500	5,000	5,200	600	371,800
Del Norte	4				1	42	538	43,300	7,100	38
El Dorado	8	3	34	63,400	380	492	8,239	20,137	151,290	1,584,391
Fresno	10		17			88	275	1,750	10,400	12,600
Humboldt					22	65	3,350	25,150	44,820	360
Inyo			5	25		30	250	275	15,000	10,000
Kern	53	7	5	75	2	100	3,000	40,000	6,000	7,000
Klamath							1,100	8,000	1,500	1,378
Lake	15		56	129	269	218	952	40	16,137	30,979
Lassen						87	388	4,818	30,000	3,438
Los Angeles	34,000	2,000	110	276,000	630	5,100	1,000	6,000	146,300	4,137,400
Marin										
Mariposa				100	20		1,000	2,000	2,000,000	150,000
Mendocino						70	20,000	10,000	150,000	25,000

Merced	5	7	18	87	104	108	450	281	4,776	150,000
Mono	.....	.....	.....	.....	.....	.....	150	280	3,180	.....
Monterey	.....	42	213	1,217	396	154	2,600	2,100	2,700	198,600
Napa	50	.....	170	54,640	2,990	800	8,000	810	4,000	2,172,900
Nevada	120	.....	280	129,000	421	540	2,640	21,000	170,000	450,000
Placer	62	30	871	4,868	824	697	1,938	50,536	171,600	813,514
Plumas	.....	.....	.....	.....	1	5	567	2,454	18,465	16
Sacramento	542	192	606	209,596	4,874	19,758	4,069	18,706	370,562	1,948,756
San Bernardino	875	96	225	1,230	685	930	450	749	15,000	495,000
San Diego	233	300	.....	7,000	230	300	.....	500	5,000	30,000
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	30	6	300	250	500	475	3,000	2,000	30,000	750,000
San Luis Obispo	50	500	.....	.....	100	300	.....	.....	20,600	100,000
San Mateo	15	15	100	25,000	500	550	1,000	1,200	15,000	.....
Santa Barbara	1,508	34,504	2,500	20,517	18,785	6,070	6,950	1,300	120,500	596,000
Santa Clara	167	155	6,750	16,980	525	2,500	20,150	2,750	3,260,500	1,100,000
Santa Cruz	60	11	322	3,708	163	1,092	3,354	31,166	154,800	312,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	1	.....	17	20	12	20	2,420	11,000	5,700	12,200
Siskiyou	.....	.....	.....	9,600	22	137	10,200	9,800	60,000	57,000
Solano	81	15	178	845	3,950	3,852	1,060	200	3,200	1,491,300
Sonoma	40	.....	350	2,200	3,250	1,575	14,700	4,300	150,800	3,960,850
Stanislaus	10	.....	.....	8	40	12	.....	.....	25,000	240,000
Sutter	60	1	101	68,390	1,706	1,851	303	614	900	296,820
Tehama	14	7	32	82	73	63	847	315	228,160	642,997
Trinity	.....	.....	.....	.....	1	1	2,000	6,000	96,000	20,096
Tulare	129	24	39	5,498	305	1,012	645	.....	185,000	.....
Tuolumne	70	.....	350	700	175	470	17,000	27,000	70,000	1,450,000
Yolo	217	16	215	82,722	3,337	2,310	940	1,150	1,200	546,350
Yuba	250	48	40	5,368	4,165	698	6,500	14,000	120,000	490,000
Totals	38,991	38,486	19,059	999,175	59,478	58,300	224,300	1,112,341	14,414,090	26,479,983

TABLE OF STATISTICS—Continued.

COUNTIES.	Gallons of wine.....	Gallons of brandy.....	Number of horses.....	Number of mules.....	Number of bulls.....	Number of asses.....	Number of cows.....	Number of calves.....	Number of beef cattle	Number of oxen.....
Alameda	4,780	865	7,240	850	76	17	4,950	2,618	1,690	432
Alpine	.....	.....	475	25	30	.....	250	240	500	50
Amador	58,300	950	2,950	370	60	20	2,150	1,400	1,300	160
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	136,000	9,360	2,500	210	.....	39	2,009	1,513	2,370	272
Colusa	.....	.....	8,058	625	.....	.....	1,000	.....	.....	.....
Contra Costa	70,000	.....	6,820	600	430	35	8,720	6,500	9,304	46
Del Norte	.....	.....	656	94	44	1	940	792	1,030	99
El Dorado	109,972	750	2,340	177	9	56	3,580	2,872	3,974	304
Fresno	.....	.....	6,688	680	560	75	30,000	75,215	13,370	180
Humboldt	.....	.....	6,192	434	225	15	11,317	8,450	3,327	464
Inyo	.....	.....	3,500	450	20	150	1,000	650	7,848	160
Kern	.....	.....	5,618	270	.....	62	48,925	5,222	4,651	244
Klamath	.....	.....	600	400	.....	9	800	583	1,800	85
Lake	.....	.....	1,766	168	25	5	1,647	1,456	2,655	56
Lassen	.....	.....	2,073	229	.....	3	2,816	2,467	6,382	86
Los Angeles	1,064,000	59,600	14,000	3,100	200	360	3,800	3,550	19,000	450
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	15,000	1,000	1,600	250	.....	100	1,800	1,800	5,000	360
Mendocino	.....	.....	7,800	2,250	430	30	7,000	6,000	3,000	300

Merced	10,000	2,000	1,782	350	4,280	15	11,320	10,000	8,000	500
Mono	.....	.....	728	39	16	15	672	653	1,737	28
Monterey	6,000	2,800	9,097	488	.....	20	8,889	4,042	24,036	78
Napa	297,070	3,990	5,700	510	80	40	3,410	2,650	4,100	80
Nevada	50,000	1,200	2,756	158	25	4	3,250	2,165	2,700	630
Placer	173,128	5,496	2,239	137	43	26	2,739	892	2,879	243
Plumas	.....	.....	1,281	123	89	8	2,804	2,868	2,112	116
Sacramento	170,369	6,365	8,859	519	232	27	7,755	6,997	3,991	172
San Bernardino	45,300	9,500	7,200	620	95	35	2,550	2,300	6,200	175
San Diego	2,500	.....	5,634	527	120	515	1,785	1,663	15,273	447
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	37,000	400	11,903	1,141	.....	12	4,840	5,500	11,343	250
San Luis Obispo	800	.....	8,000	300	500	150	20,000	20,000	20,000	1,000
San Mateo	.....	.....	2,800	256	15	20	5,250	1,650	1,400	160
Santa Barbara	100,002	506	5,390	494	258	54	2,923	1,796	4,829	149
Santa Clara	60,000	12,000	9,750	1,200	340	5	5,960	3,790	2,420	460
Santa Cruz	13,360	1,000	2,193	125	.....	11	2,803	1,565	2,401	320
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	1,200	.....	920	96	.....	18	1,700	1,470	1,407	218
Siskiyou	4,500	.....	9,820	1,140	460	38	5,100	3,800	2,220	420
Solano	284,321	5,960	7,950	1,560	.....	8	4,641	3,845	7,421	41
Sonoma	750,000	9,250	11,088	1,125	.....	36	15,381	28,226	1,049	434
Stanislaus	24,200	200	3,400	600	.....	.....	1,200	900	600	.....
Sutter	31,215	560	5,943	437	.....	7	3,472	2,177	5,733	16
Tehama	50,000	1,544	6,400	2,013	.....	11	6,340	3,000	800	110
Trinity	157	.....	540	176	.....	3	642	410	831	146
Tulare	8,855	3,500	8,735	428	.....	45	12,459	8,428	28,162	186
Tuolumne	58,000	12,500	3,870	275	.....	128	2,900	1,600	1,550	178
Yolo	84,700	5,500	9,773	1,167	298	17	6,449	2,869	1,644	.....
Yuba	75,000	1,150	3,975	378	150	11	4,009	2,132	3,976	193
Totals	3,795,729	157,964	237,992	27,564	9,050	2,256	283,947	248,656	256,015	10,398

TABLE OF STATISTICS—Continued.

COUNTIES.	Total number of neat cattle	Number of sheep	Number of Cashmere and Angora goats	Number of hogs	Number of chickens	Number of turkeys	Number of geese	Number of ducks	Number of hives of bees
Alameda	17,797	41,330	.....	32,960	58,700	4,580	1,120	6,970	394
Alpine	1,570	.....	300	100	1,000	100	.....	.....	.....
Amador	5,070	8,500	125	3,150	14,500	1,850	1,100	950	300
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	6,155	4,300	2,097	6,800	140,070	1,400	480	1,019	392
Colusa	20,265	181,891	.....	27,756	.....	.....	.....	.....	500
Contra Costa	25,000	29,000	40	14,400	21,300	1,360	940	1,120	540
Del Norte	2,905	1,053	.....	918	2,803	8	69	114	156
El Dorado	10,739	9,336	704	4,638	9,122	711	430	514	612
Fresno	119,265	141,870	7,375	20,260	8,880	1,200	83	712	385
Humboldt	27,622	11,098	.....	8,850	18,885	875	240	260	223
Inyo	9,618	500	50	500	3,000	200	.....	100	30
Kern	59,042	165,768	20	3,781	6,700	381	47	257	200
Klamath	3,268	20	50	900	3,000	10	5	18	25
Lake	7,778	13,994	1	10,564	20,920	2,009	580	578	228
Lassen	11,751	1,826	.....	1,081	7,234	211	32	128	.....
Los Angeles	27,000	572,000	10	6,100	39,200	1,840	570	3,000	2,800
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	10,850	27,000	1,500	10,000	15,000	2,000	300	1,000	8
Mendocino	16,730	90,000	.....	34,000	30,000	3,000	200	2,700	500

Merced	34,100	138,843	880	2,560	5,000	2,000	300	1,100	500
Mono	3,888	28	18	230	1,030	20	10	48	9
Monterey	37,045	197,167	1,637	8,609	48,600	728	911	1,280	3,315
Napa	10,320	9,800	280	12,700	18,900	6,200	570	3,100	250
Nevada	10,805	4,655	.....	1,500	6,700	3,500	375	480	325
Placer	9,298	26,193	1,933	10,395	48,805	7,163	241	481	1,096
Plumas	9,261	3,402	.....	882	5,371	96	13	167	68
Sacramento	19,147	107,256	42	9,858	41,123	7,697	1,935	1,519	1,578
San Bernardino	11,320	41,200	77	2,220	120,000	650	425	2,150	450
San Diego	19,288	67,178	912	1,139	7,036	1,500	1,100	900	500
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Joaquin	21,937	53,572	960	15,000	60,000	6,000	1,500	2,000	1,000
San Luis Obispo	61,500	110,000	200	6,000	50,000	2,000	500	2,000	900
San Mateo	11,551	750	10	1,800	8,000	250	250	400	340
Santa Barbara	9,697	286,968	495	1,281	50,900	521	152	1,401	502
Santa Clara	23,925	40,000	1,950	2,750	102,690	1,400	3,000	3,670	1,200
Santa Cruz	6,089	735	215	3,221	12,360	340	313	283	167
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	4,795	687	1	896	746	218	114	387	127
Siskiyou	12,000	28,000	.....	6,000	21,240	1,110	594	820	1,000
Solano	16,248	49,875	50	15,961	71,496	8,467	1,508	4,129	374
Sonoma	45,090	64,208	175	16,346	60,500	2,850	6,000	3,940	420
Stanislaus	2,700	170,000	.....	3,000	27,000	4,600	700	450	860
Sutter	11,398	24,390	36	11,614	22,580	2,804	231	131	441
Tehama	10,250	144,000	8	11,000	19,200	8,000	800	240	320
Trinity	2,029	200	.....	600	8,064	100	75	200	351
Tulare	58,439	231,839	4	9,098	7,468	2,238	603	713	563
Tuolumne	10,501	13,200	1,500	2,550	12,000	5,775	184	524	.....
Yolo	11,260	40,285	.....	18,193	41,726	3,250	573	518	346
Yuba	10,460	24,444	442	7,535	25,800	13,000	670	1,500	540
Totals	876,766	3,178,371	24,097	369,696	1,304,649	114,212	29,543	53,971	24,835

TABLE OF STATISTICS—Continued.

COUNTIES.	GRIST MILLS.				Barrels of flour made.	Bushels of corn ground.	SAW MILLS.		Feet of lumber sawed.	No. o shingles made.
	Steam power.	Run of stones.	Water power.	Run of stones.			Steam power.	Water power.		
Alameda	5	24	2	3	28,460	22,330	.....	.....	.....	.....
Alpine	.....	.....	.....	.....	.....	.....	3	1	1,065,000	300,000
Amador	1	3	1	2	4,150	2,900	3	.....	4,960,000	1,300,000
Butte	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calaveras	.....	.....	.....	.....	.....	.....	4	6	490,000	27,000
Colusa	3	10	.....	.....	.....	.....	2	.....	1,000,000	.....
Contra Costa	4	11	.....	.....	10,000	1,000	.....	.....	.....	.....
Del Norte	1	1	1	2	980	140	2	2	3,750,000	100,000
El Dorado	1	2	1	1	30,000	.....	15	10	9,001,620	455,000
Fresno	.....	.....	1	2	350	800	2	1	1,024,000	200,000
Humboldt	1	1	1	1	2,850	375	7	2	40,000,000	16,300,000
Inyo	.....	.....	2	4	2,000	600	.....	3	1,000,000	500,000
Kern	1	2	3	3	800	300	2	2	250,000	150,000
Klamath	.....	.....	1	2	1,200	400	2	5	5,000,000	500,000
Lake	1	1	1	2	21,600	2,000	3	2	.....	500,000
Lassen	.....	.....	2	3	3,700	500	1	2	500,000	50,000
Los Angeles	.....	.....	6	11	2,500	41,000	2	.....	20,000	.....
Marin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa	.....	.....	.....	.....	.....	.....	6	.....	2,000,000	300,000
Mendocino	2	2	5	5	27,000	600	18	.....	70,000,000	3,000,000

Merced	.....	.....	3	8	12,000	8,000	.....	.....	.....	.....
Mono	.....	.....	1	2	600	60	2	3	524,000	.....
Monterey	2	2	1	1	2,150	240	.....	.....	.....	.....
Napa	2	6	1	2	17,480	3,200	2	.....	190,000	21,000
Nevada	1	4	.....	.....	18,000	4,500	27	11	35,670,000	12,000,000
Placer	.....	.....	.....	.....	.....	.....	12	3	17,000,000	500,000
Plumas	.....	.....	1	2	1,050	.....	4	6	885,000	10,000
Sacramento	4	18	1	1	211,400	17,000	2	.....	Re-sawing.	.....
San Bernardino	.....	.....	2	3	7,300	3,200	4	.....	3,500,000	800,000
San Diego	1	3	1	2	3,000	500	.....	.....	.....	.....
San Francisco	11	42	.....	.....	697,150	.....	.....	.....	.....	.....
San Joaquin	4	14	.....	.....	85,000	4,500	.....	.....	.....	.....
San Luis Obispo	.....	.....	2	3	.....	.....	2	.....	3,000,000	.....
San Mateo	1	2	1	2	3,200	300	14	3	5,000,000	130,000,000
Santa Barbara	1	2	1	2	.....	30,000	.....	.....	.....	.....
Santa Clara	8	24	3	8	373,000	3,500	3	4	7,975,000	975,000
Santa Cruz	2	5	3	6	23,000	3,924	16	7	13,886,000	15,000,000
Shasta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra	.....	.....	1	2	98	.....	9	12	6,000,000	590,000
Siskiyou	2	4	6	9	26,840	2,960	3	11	5,200,000	1,060,000
Solano	4	19	.....	.....	19,819	1,160	.....	.....	.....	.....
Sonoma	4	6	4	4	60,300	5,900	13	1	9,200,000	5,000,000
Stanislaus	1	3	1	4	28,000	1,000	.....	.....	.....	.....
Sutter	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tehama	.....	.....	3	8	17,000	2,000	4	2	7,000,000	300,000
Trinity	.....	.....	1	1	530	200	.....	15	1,042,000	.....
Tulare	1	3	2	4	2,989	3,500	3	1	2,625,000	200,000
Tuolumne	2	5	.....	.....	.....	.....	4	4	3,000,000	.....
Yolo	2	10	.....	.....	52,500	13,500	.....	.....	.....	.....
Yuba	3	12	1	2	60,000	14,000	9	4	4,000,000	800,000
Totals	77	241	67	117	1,847,996	196,089	205	123	265,457,620	190,938,000

TABLE OF STATISTICS—Continued.

COUNTIES.	QUARTZ MILLS.		MINING DITCHES.			IRRIGATING DITCHES.		WOOLLEN MILLS.	
	Number.....	Tons crushed....	Number.....	Miles in length.	Amount of water used per day—inches.....	Number.....	Acres irrigated.	Number.....	Pounds of wool used.....
Alameda									
Alpine	5					2	2,500		
Amador	29	87,500	46	470	5,980	40	1,470		
Butte									
Calaveras	28	136,860	19	515	5,800	27	272		
Colusa									
Contra Costa									
Del Norte			20	81	5,700	4	35		
El Dorado	37	20,900	59	966	4,500	31	1,872		
Fresno		75				23	1,375		
Humboldt									
Inyo	8	10,000				20	4,500		
Kern	9	790	1	5	1,728	3	3,000		
Klamath	4	680	80	90	16,000	10	800		
Lake						1	600		
Lassen						1	1,200		
Los Angeles	2	5,900	3	25	800	52	18,200		
Marin									
Mariposa	34	30,000	10	66		60	210		
Mendocino									

Merced						7	1,400	1	300,000
Mono	4	900	2	13	900	14	4,000		
Monterey									
Napa									
Nevada	78	240,000	70	1,026	42,400	18	500		
Placer	14	6,000	10	302	14,000				
Plumas	8	39,650	53	211	17,850	16	880		
Sacramento			3	93	5,600			1	
San Bernardino	1		1	3	500	45	8,600		
San Diego	5	800							
San Francisco								2	2,800,000
San Joaquin						2	3,000	1	30,000
San Luis Obispo						30	2,000		
San Mateo									
Santa Barbara									
Santa Clara						60	4,360	2	400,000
Santa Cruz									
Shasta									
Sierra	23	53,000	50	213	2,400	19	320		
Siskiyou	4	12,000	24	290	5,000	180	6,900		
Solano									
Sonoma									
Stanislaus			2	10	500				
Sutter						1	400		
Tehama						43	700		
Trinity	1	150		290	38,000	74	650		
Tulare	2					110	5,000		
Tuolumne	8		4	135		2	15,000		
Yolo									
Yuba	4		60	70	4,200	20	600	1	250,000
Totals	308	645,205	516	4,874	171,858	915	90,344	8	3,780,000

TABLE OF STATISTICS—Continued.

COUNTIES.	COTTON MILLS.		COAL.	RAILROADS.		DISTILLERIES.		BREWERIES.	
	Number	Pounds of cotton used	Tons mined	Number	Miles in length	Number	Gallons	Number	Gallons
Alameda				3	90¾			6	277,500
Alpine								2	1,500
Amador			1,100	1	¾	2		5	
Butte									
Calaveras				1	¾				
Colusa									
Contra Costa			120,000	2	13			1	
Del Norte				1	3			1	5,200
El Dorado				1	18¾	2	750	4	17,100
Fresno									
Humboldt				1	2			2	
Inyo								2	10,000
Kern								1	1,200
Klamath				2	2				
Lake								1	4,000
Lassen									
Los Angeles				1	20½	42	59,600	2	28,000
Marin									
Mariposa								2	
Mendocino						1		5	15,000

Merced						3	2,000		
Mono									
Monterey						2		2	12,000
Napa				2	41	5	3,990	2	19,000
Nevada				1	30¼	4		18	
Placer				2	112	3	6,000	6	57,574
Plumas								4	68,000
Sacramento				4	63	8	4,276	8	311,400
San Bernardino						3	9,500	2	
San Diego								2	13,000
San Francisco						4	790,500	33	1,605,000
San Joaquin				5	93			3	60,000
San Luis Obispo								1	70,000
San Mateo				1	152			2	
Santa Barbara						2	506	2	2,900
Santa Clara				4	65	2	12,000	6	250,000
Santa Cruz						1	1,000	5	69,210
Shasta									
Sierra								7	3,400
Siskiyou								5	
Solano				2	48			3	11,579
Sonoma				2	41½	4	25,000	2	40,000
Stanislaus				2	29	1		2	5,040
Sutter				2	34	3		1	
Tehama				1	11½				
Trinity								2	2,600
Tulare						6			13,500
Tuolumne				2	32	7		6	
Yolo						11	90,200	3	37,000
Yuba				3	28¼	3		1	
Totals			121,100	46	932	119	1,005,322	162	3,010,703

TABLE OF STATISTICS—Continued.

COUNTIES.	ASSESSED VALUE OF PROPERTY.				Estimated tot'l population.....	Registered Voters.....	Poll Tax collected.....
	Real estate.	Improvements.....	Personal property..	Total valuation.....			
Alameda	$8,370,769 00	$1,851,675 00	$2,170,882 00	$12,393,326 00	26,000	5,995	$7,474 00
Alpine.....	188,000 00	63,000 00	152,000 00	403,000 00	1,000	240	163 00
Amador	317,120 00	968,440 00	713,287 00	1,998,847 00	10,390	2,340	1,875 00
Butte	.....	.....	.....	.....	.....	.....	.....
Calaveras	310,446 00	272,878 00	505,382 00	1,088,706 00	.....	.....	.....
Colusa.....	2,000,000 00	500,000 00	2,000,000 00	4,500,000 00	8,900	2,877	.....
Contra Costa	1,667,828 00	519,963 00	1,046,479 00	3,234,270 00	10,000	2,677	3,018 00
Del Norte.....	92,531 00	121,510 00	262,579 00	476,620 00	2,350	501	1,359 00
El Dorado.....	367,860 00	749,810 00	1,030,773 00	2,148,443 00	10,500	3,300	4,406 00
Fresno	1,785,761 00	107,415 00	1,536,034 00	3,429,210 00	3,500	652	652 00
Humboldt	756,850 00	483,185 00	1,203,916 00	2,443,951 00	10,000	2,361	2,531 00
Inyo	92,872 00	167,815 00	473,784 00	734,471 00	2,800	600	300 00
Kern	856,000 00	144,000 00	1,300,000 00	2,300,000 00	2,300	700	600 00
Klamath.....	112,795 00	62,253 00	254,851 00	429,899 00	2,000	394	700 00
Lake	With improvements.	631,730 00	453,874 00	1,085,604 00	3,700	950	850 00
Lassen	67,135 00	136,040 00	434,908 00	638,083 00	1,400	473	218 00
Los Angeles.....	4,377,292 00	With real estate.	2,540,782 00	6,918,074 00	16,300	3,850	3,000 00
Marin	.....	.....	.....	.....	.....	.....	.....
Mariposa	211,115 00	396,910 00	546,703 00	1,154,728 00	6,000	1,300	2,344 00
Mendocino	.....	.....	.....	.....	8,000	2,340	.....
Merced	2,114,114 00	205,420 00	1,124,982 00	3,444,516 00	2,900	1,200	1,000 00
Mono.....	38,070 00	85,020 00	210,881 00	333,971 00	475	252	225 00
Monterey	2,114,184 36	377,575 00	1,478,085 26	3,969,844 62	9,858	2,553	2,522 00

Napa	1,971,990 00	990,595 60	842,875 00	3,805,460 00	10,500	2,237	1,000 00
Nevada	2,208,713 00	1,066,495 00	1,497,149 00	4,772,357 00	20,000	6,452	7,200 00
Placer					11,500	6,974	
Plumas	606,362 00	257,740 00	597,190 00	1,461,292 00	4,500	1,830	1,315 00
Sacramento	3,500,000 00	3,200,000 00	5,100,000 00	11,800,000 00	35,000	7,500	10,700 00
San Bernardino	630,500 00	20,200 00	384,000 00	1,034,700 00	7,200	1,420	530 00
San Diego	1,583,904 00	249,012 00	732,206 00	2,565,212 00	4,500	1,400	1,500 00
San Francisco	75,000,000 00	With real estate.	27,595,498 85	102,595,498 85	150,000	33,000	Not given.
San Joaquin	4,562,565 00	2,078,615 00	2,187,800 00	8,828,980 00	25,000	6,000	2,746 00
San Luis Obispo	1,200,000 00	200,000 00	1,000,000 00	2,400,000 00	6,000	1,527	
San Mateo	1,962,026 00	With real estate.	359,454 00	2,321,480 00	6,400	2,050	663 00
Santa Barbara	2,063,735 47	With real estate.	858,870 00	2,922,605 47	9,000	1,932	600 00
Santa Clara	5,750,314 00	3,391,178 00	2,969,409 00	12,110,901 00	26,246	7,526	9,400 00
Santa Cruz	1,066,373 00	579,026 00	500,910 00	2,146,309 00	8,800		2,800 00
Shasta							
Sierra	798,940 00	376,085 00	713,643 00	1,888,668 00	5,550	2,150	3,510 00
Siskiyou	707,933 00	With real estate.	1,446,277 00	2,154,210 00	6,920	2,150	1,776 00
Solano	4,763,155 00	With real estate.	1,335,706 00	6,098,861 00	24,000	4,129	4,450 00
Sonoma	4,041,250 00	1,303,527 00	2,706,010 00	8,050,787 00	22,500	5,240	7,052 00
Stanislaus	1,814,057 00	323,035 00	946,870 00	3,083,962 00	5,600	1,800	
Sutter	993,101 00	669,821 00	1,000,519 00	2,663,441 00	7,100	1,300	1,160 00
Tehama	964,836 00	338,896 00	1,141,286 00	2,445,018 00	6,000	1,550	3,200 00
Trinity	68,650 00	275,000 00	189,250 00	533,000 00	3,170	863	740 00
Tulare					10,000	1,600	905 00
Tuolumne	245,758 00	284,368 00	483,266 00	1,013,392 00	8,050	2,630	
Yolo	1,946,382 00	728,985 00	1,609,690 00	4,285,057 00	10,000	2,235	1,465 00
Yuba	1,004,735 00	1,375,640 00	1,637,385 00	4,017,760 00	11,000	3,500	4,468 00
Totals	$145,296,121 83	$25,552,857 00	$77,275,536 11	$248,124,514 94	582,909	144,650	$100,417 00

ANNUAL MEETING

OF THE

STATE AGRICULTURAL SOCIETY FOR 1872

BEING THE EIGHTEENTH ANNUAL MEETING.

The eighteenth annual meeting of the State Agricultural Society took place January 24th, at the Pavilion. There was a full attendance of the members, not only from Sacramento and vicinity, but from the adjoining counties. The proceedings were characterized by great harmony and unanimity of feeling.

At half-past twelve o'clock the meeting was called to order by the President, Charles F. Reed. He announced that the business in order before the Society was the reports of the officers and the election of a President and three Trustees. The first thing in order, he remarked, was the reading of the annual minutes, which would now take place.

The Corresponding Secretary commenced reading, when Senator Lewis moved that the further reading be dispensed with, which motion was carried.

The President announced that the next business in order would be the

REPORT OF THE BOARD OF DIRECTORS.

The Secretary commenced the reading of the report, when it was moved that its further reading be dispensed with. Motion adopted.

[The report in full will be found on page three.]

GENERAL BUSINESS.

Dr. Harkness moved that a committee of five be appointed by the Chair to consider and report upon the financial statement of the Secretary.

It was moved as an amendment that the committee be composed of three members instead of five. Carried.

The President announced as the committee, Dr. Harkness, L. A. Upson, and John H. Carroll.

Dr. Harkness stated that he must decline acting on the committee.

The President said he would name in the place of Dr. Harkness, Marcus D. Boruck, of San Francisco.

Mr. Boruck declined, when the President appointed in his place Senator Perkins, of Butte.

The President then remarked that he had intended to call for the credentials of members residing outside of Sacramento, and would do so now. He would request members of the Society from other parts of the State to pass in their credentials.

The credentials of the members were presented as follows:

Siskiyou—Senator Irwin, J. K. Luttrell.

Sonoma and Marin—H. L. Weston, F. W. Lougee, Lee Elsworth, H. N. Hinshaw.

Santa Clara—W. C. Wilson, James P. Sargent, H. W. Frank, C. Maclay.

Upper Sacramento District—G. C. Perkins, W. N. De Haven, E. Hallet.

San Joaquin Valley Agricultural Society—George West, T. K. Hook, George S. Evans.

Northern District Agricultural Society—Honorable C. Kent.

Bay District Agricultural Society—Honorable John Boggs, F. A. Miller.

The President then called the attention of members to the reading by the Corresponding Secretary of the following communication from the

DEPARTMENT OF AGRICULTURE.

WASHINGTON, D. C. December 20th, 1871.

I. N. HOAG, *Sacramento, California:*

DEAR SIR: By the Act of the second of July, eighteen hundred and sixty-two, Congress donated to the several States a portion of the public lands, in the ratio of their population, for the purpose of establishing Agricultural Colleges, thereby evincing a purpose to promote that great interest through the instrumentality of the respective States. Many colleges have been and doubtless many more will be established. State Agricultural and Horticultural Societies and Boards of Agriculture have been established by law in many States. A correspondence and consultation between friends of these interests have led to the conclusion that a Convention of Delegates representing them, for the purpose of conferring upon subjects of mutual interests, would promote the good of all. It has been suggested that I take the responsibility of initiating such a meeting. I therefore propose that each Agricultural College, State Agricultural Society, State Horticultural Society, and State Board of Agriculture depute two Delegates to meet in Convention at the City of Washington on Thursday, the fifteenth of February next, to take such action regarding the interests of agriculture as they may deem expedient.

I am, very respectfully,

FREDERICK WATTS, Commissioner.

Captain Haynie moved that the Society elect two Delegates to the Convention spoken of.

The motion was adopted.

L. A. Upson moved to reconsider the vote just passed, for the purpose of having the subject matter referred to the Board of Directors.

The motion was reconsidered, and it was then moved by Mr. Upson that the Board of Directors be authorized to appoint the two Delegates.

The motion was adopted.

The President then presented to the meeting a communication from the

SIGNAL OFFICE AT WASHINGTON.

WASHINGTON, January 13th.

I. N. HOAG, *Secretary of the Meteorological Committee of the State Board of Agriculture, Sacramento, California:*

SIR: By direction of the Chief Signal Officer of the Army I have the honor to acknowledge and answer your communication to him of the twenty-seventh ultimo. This office is much gratified at the commendation of its labors expressed by you, and is very desirous to establish more stations on the Pacific slope with reference to the enlargement of the system of observation, report, and forecast for that region. At this time, however, the condition of the appropriation is such that curtailment rather than expansion will become necessary without special action of Congress. What is now done is the utmost possible with the means given. There will be no difficulty about the occupancy of any necessary stations, provided the Secretary of War be authorized to use sufficient force and Congress will furnish the necessary money to meet the really economical cost. It is sufficient that a representation from your Board, with petitions from corporate bodies and prominent citizens, addressed to the Senators and members of Congress representing the parties interested, and other petitions addressed to the Secretary of War, under cover of this office, would be useful in accomplishing the object desired.

I am, sir, respectfully yours,

GARRICK MALLERY,
Captain and Brevet Lieutenant Colonel United States Army, Acting Signal Officer and Assistant.

Dr. Logan said:

Mr. President: The letter which has just been read by our Secretary is the result, as you have been informed, of the action which has been taken by your Committee on the Signal Service, of which committee I have the honor of being a member. It is unnecessary to consume the valuable time of the meeting in discussing the advantages to be derived from a more extensive establishment of this important arm of the agricultural department—they are patent, and have been recognized and appreciated by the whole community. Permit me, therefore, to offer in lieu of a report from the committee I represent the following preamble and resolution:

WHEREAS, From the success which has attended the operations of the Signal Service in predicting storms on the Pacific Coast, it is evident that additional benefits may be secured by an increase in the number of stations; therefore,

Resolved, That the State Board of Agriculture be requested to memorialize Congress urging the necessary appropriations for such increase of stations, and that proper representations be made to the War Department in favor of one of these stations being located at Sacramento—it being a central point, both geographically and climatically.

Senator Minis moved that the resolution be adopted.

The motion was carried unanimously.

Secretary Hoag then announced that the next business in order was the election of a President of the Society.

Senator Lewis moved that the election be conducted by ballot and two Tellers be selected.

J. H. Carroll here offered the following preamble and resolution:

Whereas, The State Agricultural Society fully appreciates the importance of having the products of our State in all the departments of industry represented at the World's or International Exhibition at Vienna in eighteen hundred and seventy-three; and, whereas, for want of proper countenance and assistance from the State Government we were but poorly represented at the International Exposition held in Paris in eighteen hundred and sixty-seven; therefore,

Resolved, That this Society earnestly recommend the Legislature to make a liberal appropriation to assist in securing a creditable exhibition at the World's Fair in Vienna in eighteen hundred and seventy-three, and also to appoint proper Commissioners to see that such products are well displayed, and to report on the exhibition generally.

The resolution was adopted.

The President then announced as Tellers, L. Powers and C. H. Ross.

Nominations were called for and Frank S. Malone nominated Charles F. Reed, and moved that his election be made unanimous.

Senator Minis seconded the nomination, and moved that he be nominated by acclamation.

Senator Lewis being in the chair, F. S. Malone suggested that the Secretary cast the full vote of the Society.

The suggestion was adopted.

The Secretary deposited the vote and the Chairman, Senator Lewis, declared that C. F. Reed was elected President.

It was then announced by the Chair that the next business in order was the election of three Directors in the place of Edgar Mills, Robert Hamilton, and C. T. Wheeler.

M. D. Boruck moved that the list of the members of the Board be read, which was done by the Secretary.

Senator Lewis put in nomination Messrs. Mills, Hamilton and Wheeler, and remarked that for some time past he had acted in concert with these gentlemen, and he looked upon their presence at the Board as almost indispensable.

M. D. Boruck inquired how many of the Directors were from Sacramento, and the answer was made from the Chair, four.

The President announced that the nominations were now closed.

Dr. Montgomery here moved that the Secretary be authorized to cast the vote of the Society in the matter of the election of the three members of the Board.

Motion adopted.

The Secretary cast the vote, and the President declared that Edgar Mills, C. T. Wheeler, and Robert Hamilton were elected Directors of the Board for the term of three years.

It was stated that the report of the Finance Committee would be made to the Board of Directors instead of to the Society, inasmuch as its general business was transacted.

Notice was given that the Delegates to the different Agricultural

NOTES UPON CALIFORNIA PRODUCTS,

SUBMITTED TO THE AMERICAN POMOLOGICAL SOCIETY AT THE ANNUAL MEETING IN RICHMOND.

BY DR. J. STRENTZEL.

Numerous books and innumerable newspaper articles have from time to time heralded to the world the wonderful resources of California, the prolific and mammoth growth of its forest trees, gigantic pumpkins, hefty pears, and luscious grapes, so that but little more on that scope remains to be said. Otherwise, it is of the utmost interest to every terraculturist repeatedly to dwell upon the conditions favorable to the development of those products; to unravel the mooted points regarding the culture of our fruits, and decide upon their adaptability to different sections of the country; and finally, to relate, compare, and compile the individual efforts and experiences.

Favored by a most genial climate and a virgin soil rich in all the elements of plant food, the first seeds here given to the earth grew up luxuriantly, amply rewarding the labors of the culturist. Still, at the threshold of our efforts, we were controverted by the advocates of deep and of shallow plowing, or even trenching, as a preliminary operation to planting. The conviction here appears to be settled, that a deep, mellow, and friable soil will do with less plowing; but heavy, adhesive clays cannot be worked too much, provided the soil is well stirred but not turned over to a great depth nor left too flaky, but well pulverized and compressed. In this during six months rainless climate, if the soil is well pulverized, corn, beans, and many vegetables are raised successfully without a drop of water, and fruit trees develop thriftily. Some ascribe this to capillary attraction of moisture from the bowels of the earth; others, with better reason, to the known processes of condensation. With twenty inches of yearly rainfall favorably distributed, all grain and fruits yield abundant crops. Still, judicious irrigation would enable us to grow perpetual crops during the year, and also, if applied early in the season, would improve the size and juiciness of our fruits without deteriorating their keeping qualities. Newly transplanted trees can gain by irrigation in one the growth of three seasons.

Irrigation, so well understood by the ancients, but neglected under the barbarism of the middle ages, begins to receive that attention commensurate to its importance for California. To prevent and repair waste is an incontroverted axiom in agriculture. Still, there is but little done with us to utilize the most valuable part of our surface soil, or prevent its being carried off by heavy rains and overflow. Millions of acres of the richest soil, now lying barren or with only scanty vegetation, are waiting for the vivifying flow over their surface of the superabundant waters of the Sacramento and San Joaquin rivers and their tributaries, to fill the granaries of the world; and the overflowed or tule land at the conjunction of those rivers, if reclaimed, would surpass in abundance and variety of products the famous delta of the Nile. The work of reclaiming these tule lands is prosecuted most energetically; and the facility of its accomplishment, and the success already achieved in raising bounteous and luxuriant crops, surpasses the most hopeful anticipations. Their value is enhanced by the locality being exempt from miasmatic diseases. They are subject to public entry at one dollar and twenty-five cents per acre, and the proceeds are disbursed for their reclamation. Here are homes for the asking, in the future Holland of the Pacific—the most valuable, the most highly to be prized land in California!

The tap root was another source of botheration, until by digging, observing, and comparing—following up several roots through many yards of gopher holes, some by a circuitous route of over forty feet into a well, and others about the cellar—I concluded that it was wicked to curtail that appendage. It was opposing the instinct of nature by a contracted spirit; besides, it was fighting a shadow. All the trees I ever bought had a superabundance of top, but scanty taps.

In my first efforts at horticulture, I was forcibly impressed, while contemplating the promising fruit buds on my yearling peach trees, that to secure peaches for next season I certainly should not whittle up my darlings into fashionable standards, so I contented myself with pinching off the ends of the shoots, and have invariably followed the practice since with profit, though often mortified by the remark of Eastern visitors, that "The trees looked unnatural." Low-branched fruit trees shade the ground, protect the stem from injury and sun scald, and reduce the expense of pruning and gathering fruit fully fifty per cent.

Our protracted dry season, bright skies, and high temperature, are favorable to the development of fruit buds, hence our fruit trees are weakened in their physique by overbearing; and if to this is added insufficient moisture, close planting, and neglect in pruning, they soon fail. The advice holds good, to follow the renovating system of pruning by shortening in the branches, thinning out the fruit, clean culture, and shading the trunk. There is a needless apprehension with some, that covering the stems of fruit trees with a wash composed of clay, lime, and ashes, which is otherwise very serviceable to protect the stem from manifold injuries, would obstruct the pores of the bark, to which they ascribe the office of lungs. Having had occasion to apply such a mixture some seven years ago, I observe the good effects of that application to this day. The once painted bark of those trees is perfectly smooth and healthy looking, while the bark above has a dull appearance and is covered more or less with moss.

There is considerable difference here in the season of the ripening of many varieties of fruit; some late Winter varieties getting mellow in the Fall; but it depends entirely on the location, influenced by the aspect

of the ground, dryness of the soil and the temperature, and is not general; hence our markets are supplied for many months with a given variety of fruit in all stages of ripeness. From the same cause there is also a great difference (undoubtedly more than in other countries) in the flavor, size, and coloring of California fruit. Our pioneers in horticulture, formerly strangers to that vocation, tried to surpass each other in possessing the greatest number of varieties; and it is to be regretted that in very many instances they were imposed upon by unscrupulous nurserymen with long catalogues of so called choice varieties, which mainly proved perfectly worthless, and the products of those trees now encumber our markets with unsaleable and inferior fruits.

It would be desirable if there could be the same spirit enlisted in the effort of renovating and infusing new vigor in the few really choice and desirable varieties that is now devoted to producing new ones from seed. The effort would be as alluring in its results and require fully as much attention, care, and judicious discrimination, besides affording far more profitable returns; it would necessitate the careful selection of well developed seeds from thrifty seedling trees, if possible, to raise stocks, and the selecting of cions from perfectly healthy young trees bearing a number one fruit and in every way of normal condition.

Our fruit trees are as yet measureably exempt from disease and depredations of insects, but those pests begin to multiply and soon will be as annoying as in the older cultivated sections of the country.

But California can claim preëminence in the culture of the vine. The choicest foreign varieties, either adapted for the table or for wine, thrive to perfection, and it is only a matter of time to render superfluous the importation of raisins and wines. It is not to be expected that a new industry, requiring very nice and careful manipulation, considerable accumulated capital, and many provisions and appliances which in other countries took many generations to establish, can have arrived at perfection within the one decade past; but there is no exaggeration in proclaiming that here are lying idle innumerable most choice spots in every way favorably adapted for viniculture, waiting for the first comer to appropriate his share as a free gift from the nation. Those future princely vineyards can be selected according to whim or knowledge in every desirable aspect, altitude, underlaying strata of decomposed volcanic or aqueous detritus, with any desirable predominance, either of silicius or calcarious formations, and with equally great modifications in climate and other meteorological conditions. The vine once rooted delights in the ardent rays of the sun; no drought checks its growth; no vicissitudes of season destroy the vinegrower's hope in California; no exhausting labor exacts his every moment of existence for carrying on his back the little earth he can scrape between rocks and cliffs to nourish his vine; nor needs he to toil through many unpropitious seasons to obtain now and then a fair crop. The fig, the olive, pomegranate, the citron family, the tea and coffee, and even the tropical palm and banana are ready to fill his lap with golden fruit—a most worthy prize for exertion. The more modest mulberry is destined to exceed them all in value with the silken threads soon to be spun in so many prosperous households. Nut bearing trees of many varieties and the nourishing chestnut are ready as so many substitutes for bread. Even the cork oak takes delight to float us over many difficulties and assist in all good offices towards the vinegrower.

J. STRENTZEL.

Alhambra, August 12th, 1871.

CLAIMS AND CONDITION OF INDUSTRIAL EDUCATION

BY E. S. CARR, M. D., PROFESSOR OF CHEMISTRY AND AGRIGULTURE IN THE UNIVERSITY OF CALIFORNIA.

When I think of the great mechanical and manufacturing interests to which England owes so much of her wealth and prosperity; of the condition of her working classes, the thousands who burrow in her mines and are ground in her factories until all semblance of the higher humanity is lost, and contrast it with the comfort, intelligence, political and social power those very classes so quickly reach in this free land; when I think of the great facilities afforded in Europe for technical and agricultural education, and how careless our Government has been, until recently, in this respect, I realize that "Freedom—that is, the absence of all restrictions which can prevent men from using to their advantage the powers which God has given them—is the mightiest of all the conditions of progress in civilization and culture." Freedom of thought and conscience, planted on such a field, sees that every step of her progress is dependent upon the popular intelligence, and that with every step comes some new question of responsibility; some new social or political problem which requires a trained intellect and will for its solution. If Europe, foreseeing the approaching doom of principalities and powers by the light thrown from these shores, has been preparing for popular government by popular education, how careful and zealous should this nation, holding in trust the faith of all nations in free institutions, be to secure their perpetuity and full development? Never in the history of the world were its toilers and thinkers brought into such close fellowship; the exchanges of products between them has never been so rapid and the good results so generally acknowledged. Our system of popular education is the first great constructive measure of national progress, and this has yet to be moulded to its purposes through a system of higher institutions organized into harmony with the great requirements of our country and period.

THE FIRST GREAT REQUIREMENT.

That the first great requirement of our country is the fullest, freest, and most liberal education of the masses, no one will deny who thinks what the duties of American citizenship are fast coming to be, and of her peculiar position, holding Asia by one hand and Europe by the other. What great questions of race, sex, of political and religious liberty, of property, of capital and labor, are to be acted upon, if not settled, by the children now in our public schools! Can we feel that the kind of training our children are receiving is sufficient, or that best calculated to prepare them for their great responsibilities? How much arithmetic, geometry, and grammar will enable your son to vote intelligently on a

question of free trade, to become Chairman of a legislative committee who have the pauperism, the criminality, the insanity of the State to look after? Does it require years to learn how to build a house or a steamship properly, or to make a machine, and neither time nor training to make a just law?

It must soon be understood and conceded that a thorough training in general science, culminating in the science of life—the scientific study of human nature—is essential to a right performance of any of the functions of government. The reason for this is very simple. Nations are only aggregates of individual life, and all the phenomena displayed on the larger have their explanation in the laws which govern the narrower field of individual action. Legislation will always be a series of experiments, often very poor ones; it will continue to be a kind of tinkering at legalized abuses, until a clear comprehension of the laws of life, and the way in which these laws underlie and determine social growth and organization, is obtained.

I have lingered over these considerations because we are so apt to look only upon science as the instrument of our material prosperity, to congratulate ourselves upon the way in which we have made steam and electricity and various agencies lighten our muscular labor and add to our comfort—forgetting that "there is no wealth but life," including all its powers of labor and of a wise enjoyment of its fruits of labor. The invention of a machine which will do the work of twenty men, though it make the inventor rich and gives to each laborer a certain amount of leisure, is a questionable blessing unless this wealth and leisure become means for the satisfaction of higher wants. If the sons of farmers, manufacturers, and mechanics abandon their fathers' business, which was the source of their wealth and leisure, and transfer all their ambition, influence, and power to the pursuit of rank and reputation and the building up of false standards of social life, we have loss instead of gain; loss in the productive and no gain to the intellectual class. In Europe a mechanical pursuit, like a factory or commercial house, becomes a matter of family pride and inheritance. It is plain that our well to do middle classes are not as well satisfied as those of foreign lands with modest competence; are not honoring their callings by a firm and dignified adherence; but are recklessly and often ruinously following the armies of speculators and spendthrifts.

HOW SHALL WE EDUCATE?

The question has become one of vital importance to the nation, how shall we educate our youth so that there shall be more farmers and more mechanics, more producers in the land? and how shall we raise these pursuits to the rank they deserve in the hierarchy of industries? It is in vain, however, to eulogize callings whose votaries forsake with every opportunity—whose children turn from with disgust. Congress might give every acre of the public domain to found Agricultural and Industrial Colleges, making them not only free but giving a bonus of lands as the reward of attendance, and still their halls will remain empty until the relations of labor to human nature are understood and carried into practice—until the farmer and mechanic, out of their sense of privation, loss, failure, and onesidedness, shall resolve that his children be as carefully cultured as his fields; that they shall grow up in pleasant homes and be daily laying up, if not dollars and cents, "capital for after pleasures of thought and memory." Let us reason together about this

business of industrial labor, agriculture, wherein it fails to meet the higher demands of human nature, and why, in California especially, we are looking to the lower class of foreigners for the permanent tillers of American soil and laborers in the more important industries.

In Great Britain men seek to gain fortunes that they may become the owners of country homes; it adds to their dignity to be landed proprietors. The tastes of rural life are there cultivated and diffused. This has given to its farmers great social and political consideration. They have a weight in shaping the policy of Government which they do not have elsewhere, and this in spite of an aristocratic social structure which would seem far more unfavorable than that of our own country. Throughout Europe it may be asserted that the foundation of social distinction is always in the ownership of land, not held as with us for speculative purposes, but for actual and perpetual use. Something of this sentiment came over in the Mayflower and got planted on the James River, but in our long migrations across the continent it seems to have lost greatly in strength. Certainly it does not now distinguish the higher classes of society, and if we look for a genuine, hearty love for the land, we shall find it among the humbler classes of European emigrants who have been taught the value of it by their wants.

The Valley of the Rock River, in Wisconsin and Illinois, is one of almost unequaled fertility, and within my own remembrance has been twice colonized—first, by settlers from New York and New England, the advance of the wave which spent itself so largely in Michigan; and secondly, by Germans and Scandinavians. The first came in and took up extensive tracts of land, which they cropped year after year with wheat, burning their straw, and returning nothing to the soil. They cut down the spare timber of the openings, and the climate not being favorable for fruit growing, left nothing in its place. By the time their lands were well fenced, comfortable houses and barns erected, they discovered that the crops were not as heavy as formerly; there were more frequent droughts, more "chinch bugs;" many of the pioneers sold out and moved to Missouri, Kansas, or the Pacific Coast. Meanwhile the hardy Norwegian and German emigrants, who, coming later, had taken up the less desirable sections of wild land—saving, in European fashion, every scrap of manure, planting trees and vines, and settling more in communities, have been able in many cases to buy up these improved homesteads, until in some locations the entire nationality of a district has been changed—certainly not for the worse, if the accelerated increase of the population and value of the land is considered. Wisconsin, Iowa, and Minnesota, and more lately, Missouri, have gained immensely in gaining this home-making element.

RESPECT FOR THE SOIL.

If it be true that there is a degeneracy of sentiment in respect to the intrinsic dignity and nobleness of industrial pursuits in American youth, and that the elders seem to look to these rather as a means to some very different end than the handing down of a well-earned success to worthy successors in the same line, then let us seriously ask the question: How shall we improve in this respect, and create in this country, as there is in Europe, a higher sentiment of attachment to the soil than springs from a sordid self-interest, till paternal acres represent here, as in older lands, social standing, intelligence, leisure, and culture? I believe the only way to do this is to educate our youth—boys and girls—into a

respect for these pursuits; to provide liberally for such education, and to multiply in every possible way the social enjoyments and embellishments of rural life. We must take this social nature of man into the account and not expect our children, of the age when social attractions are the strongest, to be willing to dig and delve and endure the privations common to a former condition of things. When I remember how often the growing boy was overworked, the short time for study and recreation, the disadvantages with which he entered cultivated society, I do not wonder that the farmer's and mechanic's son turns toward other occupations, or that the ceaseless household cares of the farmer's wife, in homes where beauty has not softened the hard outlines of utility, homes without music, books, and flowers, should discourage and disgust her daughters. Men have left the farm and the shop because the refinements of life have been left out of these pursuits, and because the demand for educated men in other callings has been greater than the supply. We must change all this. We must become less greedy of money and be more craving of neighbors than of acres, and learn to apply the principles of coöperation in the purchase and use of machinery. When gambling enterprises shall no longer be sustained by public opinion or legislative enactments; when hands hardened by honest toil shall equal in social value hearts hardened by vicious indulgence; when capital shall abandon speculation and engage in diversifying our industries; when farmers can purchase and own the lands they cultivate; then shall these fertile valleys and foothills be filled with free and happy homes, and then we shall have made a beginning in the right direction.

RURAL COMMUNITIES.

In Southern California, Anaheim is a good illustration of the results of social, in contrast to isolated settlements. The rapid growth of such rural communities as that of Vineland, New Jersey, proves a genuine love for rural life when it is not purchased by the loss of social privileges. The growing tendency of city population towards suburban life, a tendency shown in the formation of our numerous homestead associations, is another proof that nature is still consistent with herself. Here horticulture, the original fine art, which weaves a web of beauty around the lowliest home, becomes the link uniting country and city. The cultivation of the small garden spot, its harvest of pure and simple pleasures, begets a longing for the wider fields and freer life of the farm. To the stranger in California, the clump of lilies blooming in mid-Winter by every cottage door, the vines wreathed around porch and window, are a more irresistible attraction than the gold of her mines or the wealth of her commerce. No social organization, however attractive, will suffice permanently to elevate our industries; this can come only through education.

BOOK FARMING.

I am aware that there is a prejudice concerning "book farming," and that mother wit and plenty of manure are, in older sections of the country, considered the great essentials of successful agriculture. That kind of farming has had its day, just as pans and rockers have had their day in mining. When you think that this science is simply the record of experience in these matters, the history of experiments and their results; when you think whether it would be gain or loss to have all the

agricultural, mechanical and horticultural journals removed, all statistical information withheld, and the transmission of the most valuable knowledge this age is gaining left to tradition, you are prepared to estimate what science has done and is doing for us. Still more, my practical friend. Go back to the implements which your grandfather, who was no fool, sir, hoed and harvested and thrashed with; buy a little wheel, and a reel, and loom, and dye tub for your wife (if you are so fortunate as to have one), and tell me what you think of the service which inventors of machinery, and improvers of varieties of plants, and discoverers sent out by our institutions to find whatever can be impressed into man's service, and newspaper men, are worth to the world. And when I meet a mechanic who points to successful men who have made lucky hits without much education, and who feels inclined to follow his calling in a mindless, empirical way—realizing none of its connections with great material and social laws, I say, "My friend, all your interests are at the mercy of men who have built up vast fortunes; secured to themselves vast monopolies; made peace and war in spite of you; burdened you with taxation; because your craft has been only handicraft. A wise foresight or self-preservation will drive you to education, if all higher motives fail."

It is true that there has been a great gulf between the abstract and practical sides of industrial pursuits (and of a good many other things also); but this is being bridged over, and I propose to show you how extensively in those countries where they are most successful and most honored. You are aware that in Prussia the Government requires that every child shall be educated; assuming that it is the right and duty of the State to protect itself from ignorance, the most fruitful source of crime, as well as crime itself. She enjoys the enviable reputation of being first among nations in this respect. All Germany, Austria, and of late Russia, are imitating her example, and act on the principle that the farmer and mechanic must have as thorough an education as the lawyer, doctor, or clergyman. To insure this, they have established special schools, with every appliance of land, buildings, and apparatus; taking students from the higher classes of the public schools or otherwise, and training them for their pursuits as superintendents, overseers, or laborers. A description of one which has served for a model to the rest of Europe will suffice for all.

A MODEL SCHOOL.

The Royal Land and Forest Academy of Wurtemburg is situated at Hohenheim, a few miles from Stuttgart. You will find there a large farm adjoining a Government forest of five thousand acres (these practical Germans know the importance of taking care of and cultivating trees); about twenty acres, divided into one hundred plats, are used for experimental purposes, where all questions based upon soils and their preparation, methods of culture of new plants, are tested; a botanical garden, covering several acres, exhibiting all the varieties of plants which can be grown in that climate; there is a beet sugar factory, a brewery, a distillery, a starch factory, a vinegar factory, a malting and fruit growing establishment, a silkworm establishment, and machine shops where agricultural implements are made and mended; this department being expected to furnish the rest of Germany with the best models. All the studies are pursued in connection with actual practice in the field and forest, and embrace the general principles of agriculture,

composition and quality of soils, special plant culture, meadow culture, grape, hop, and tobacco culture, fruit culture, vegetable culture, breeding of domestic animals in general, horses, cattle, sheep and smaller animals, silkworm culture, bee culture, dairying, and practical farm business. Parallel with this practical instruction, there is carried along through the course of study arithmetic and algebra, book-keeping, a knowledge of the laws and principles of taxation, physics, general and agricultural chemistry, geology, vegetable physiology and zoölogy, veterinary science, and study of forest trees and their uses. There you will find in the highest departments sons of the gentry, fitting themselves for the general management of estates; ambitious young men from the middle classes, fitting themselves for stewards; and lower down, the sons of peasants, between the ages of fourteen and eighteen, who wish to become familiar with the routine of farm work, and who spend three or four hours in study and the rest in actual labor. Any one can have instruction in the special subjects taught. Besides, there is a course of three weeks of public school vacation, in which common school teachers are posted up in the general principles of agriculture—an example worthy of imitation.

WHAT EUROPEAN GOVERNMENTS ARE DOING.

Nor is this all that those Governments are doing for this branch of industry. Scattered around in various neighborhoods are what are called experimental stations, where twelve to twenty acres are divided into small sections for experiments in fertilizers, rotation of crops, with a chemical laboratory and professor attached, and accommodations for animals, that questions of breeding, feeding, and fattening may be settled. These are nurseries for professors in the secondary schools, and are supported by Government. Equally thorough and comprehensive are the "building schools" of Prussia. At Holzminden, one of these has five hundred pupils; and at Neinberg, in Hanoverian Prussia, is one of the same grade for machinists and millwrights, masons, carpenters and joiners, cabinet makers and locksmiths. France, before the war, had taken the lead in technical education. There was hardly a town which had not its school of design; and even in Great Britain, from ninety thousand to one hundred thousand pupils are annually receiving this kind of instruction.

But it is from Russia, who has been making such immense advances in developing all her resources, that we might draw the most striking example for imitation. In eighteen hundred and fifty-six she founded the Imperial Agricultural Institute at Gorigoritz, embracing primary, intermediate, and superior departments. Then rapidly followed the creation of numerous establishments for the production of silk, with departments for instruction in the art; schools of horticulture, farm schools, model farms, special schools for the culture of flax, all distributed with a liberality almost profuse over the vast territory of the Empire, according to the nature of the soil and climate, and the habits and needs of the people. Then followed in quick succession the great agricultural museum at St. Petersburg, with numerous smaller ones in various parts of the country; schools in Bessarabia, in Caucasia, and last of all, the great Academy of Agriculture and Forestry near Moscow, to which the Government makes an annual appropriation of one hundred thousand dollars. In Caucasia the tuition is not only made free, but small incomes are secured to meet the expenses of students. At Tiflis they have a school for teaching the

applications of science to horticulture, arboriculture, bee, vine, and silk culture, where they give board, lodging, clothing, and books to a limited number of pupils, with forty dollars for the first year, sixty-four dollars for the second, seventy-two dollars for the third, and eighty dollars for the fourth and last year; and all this does not adequately illustrate the spirit and energy with which the Government is pushing forward the noble work of educating the agricultural classes. Nor is she doing less for her schools of arts and trades. The Emperor Alexander has given the most careful attention to the training of mechanicians and technologists, and to the furnishing of workshops and laboratories where these are taught; one hundred thousand dollars is expended annually for a school of this kind at Moscow, where fourteen professors impart theoretical instruction, with a still greater number of practical mechanics to oversee the foundries, forges, lathes for wood and metals, cutting machines, and trip-hammers, which earn an additional sum of forty thousand dollars for the support of the institution.

I might fill pages with the details of what the Continental States of Europe are doing in this direction, drawn, not from government reports, but from that of our own Commissioner to the Paris Exposition in eighteen hundred and sixty-eight, the accomplished Secretary of the Wisconsin Agricultural Society, who has no superior in zeal or in knowledge of either agriculture or education.

WESTWARD PROGRESS.

Not only eastward, but westward, do we see the same large policy toward the uplifting and enlightenment of industry. The ancient empire of Japan has called from our Bureau of Agriculture its efficient head, at a salary of twenty thousand dollars and his expenses (equal to the salary of the President of the United States). It has secured the services of four other principal officers of the Bureau, and made the most munificent provisions for the success of their work. This, in a country which already knows how to make its limited territory feed a larger population than is done on any equal area on the habitable globe. Nothing was done worthy of us as a nation until Congress, by the Act of July second, eighteen hundred and sixty-two, gave to each of the States the means of founding (not of sustaining) an institution of this class. The amount of benefit each will receive depends entirely upon the intelligent administration of the fund thence derived, the good faith in which the spirit of the Act is carried out, and the hearty coöperation of the people. The object of the grant was, without a doubt, to make more farmers and mechanics, and not, as has been assumed in some places, to educate the sons of farmers and mechanics. Were the latter all that was contemplated it would be right to hitch an agricultural professor or two to some existing college feeder of the professions, and take the income of the grant as a quid pro quo; but I know of no reason why Congress should educate your son more than your doctor's son; though I see a very good reason for her establishing great manufactories of intelligent industry. And this she has aimed to do, and to her credit, be it said, she accomplished her part of the work in the darkest hour of her struggle to preserve the national existence.

The proceeds from the sale of the lands thus donated by Congress have not yet been sufficient to put any of the institutions, founded upon or assisted by the grant, in full working order. The Empire State, having the largest representation, got the lion's share, and had a citizen

rich and public-spirited enough to add to the endowment five hundred and fifty thousand dollars cash, thus relieving the necessity for an immediate sale of the lands, which, carefully located and selected under his supervision, exceed in value at the present time two and a half millions of dollars. Ezra Cornell has thus founded an institution, where, to use his own language, "any person can receive instruction in any study," a college for the whole people.

CALIFORNIA AND THE UNIVERSITY.

The State of California, accepting her share of the nation's gift, has, by a wise legislation, made it the foundation of the colleges of her State University. The University completes the State educational system, and is the crown and summit of that noble edifice of free instruction, which guarantees to every child the general culture and special training necessary to energize and economize, to lighten and enlighten all labor, until the measure of service shall become the measure of greatness. This is as it should be, but it is not for the interest of California, it is not for the interest of her farmers and mechanics, that the matter should stop here. There are colleges enough for general culture; every denomination has its own where the common legacy of literature and science is received through some one of the many colored theological lenses, and of whose graduates it is estimated that not more than one per cent ever fill the industrial ranks. West of the Rocky Mountains there was not one industrial college to take your children from the public schools, carry them forward so that every step may tell upon their life business, and at the same time show them its wide relations to other pursuits and to the public welfare, thus fitting them for citizenship. Nor was there until October third, eighteen hundred and seventy, in all this broad land a single school, or college, or university adapted for the suitable training of farmers' and mechanics' wives. I am ashamed that in matters of education we have so long behaved as if it "were better for man to be alone in his higher life," condemning him to an intellectual celibacy. Perhaps this accounts for the unproductiveness and unprofitableness of so much of his work. But from whatever other walk of life we may exclude woman, she is as indispensable to the last as she was to the first farmer. And if ever toil and care lose their wrinkles, and labor is ennobled and sanctified, it will be through her help and ministry. The higher education will never be complete until the science of housewifery is as thoroughly taught as the science of husbandry.

It affords me great pleasure to add in this connection that our State University now joins hands with all the great progressive institutions of the world in saying to the daughters, as well as the sons of California, "any person may find instruction here in any study." No sooner had the Regents put the institution in working order and fully organized its courses of instruction than they welcomed the first young lady applicants, and that, too, without a dissenting voice.

The University of California proposes to furnish all the youth of the State with a theoretical education leading toward industrial pursuits, and to exhibit its practical application to the culture of our varied products, and the development of our mineral wealth, and makes this education forever free. It proposes to gather, at convenient seasons, those interested in special cultures for mutual instruction and encouragement;

just as necessary a work as is accomplished by Teachers' Institutes for the public schools. It proposes to furnish the facilities for all needful experiments; to be the "station" where tests can be made of whatever claims attention; the repository and exponent of our progressive knowledge. It will have a complete collection of models in machinery, of seeds and woods and textile materials; its gardens and orchards, formed for instruction and not profit, will become a museum of pomology and horticulture, so classified and arranged that it may be examined and read by all. It will be the volume wherein the good and perfect gifts of a beneficent Creator to this land and people have each their appropriate pages, and every letter a type of beauty which has more than a material significance. Our climate makes the naturalization of every product useful to man practicable, at least for purposes of instruction and experiment. And the history of fruit and grain growing makes us modest in saying what man may not do under these favoring conditions of climate and soil.

I have spoken thus fully and plainly of what the University hopes to accomplish, because the realization of these hopes depends upon the people. It is a sacred and inalienable trust bequeathed to the people for their own benefit and that of future generations. They have an unquestioned right to demand that it shall primarily be adapted to popular needs, that its course of instruction shall be arranged to meet, as fully as possible, the wants of the greatest number of our citizens. The farmers, mechanics, miners, and teachers of California have a right to ask that this bequest shall aid them in securing such educational advantages as shall fit them for their pursuits in life, and which, by an infusion of intelligence and power, shall elevate these pursuits to a social dignity commensurate with their value.

The University will be all that I have promised and more, if the people to whom it belongs, through their representatives, cherish and sustain it. Our schools are the highwater mark of our civilization—this school will be the highwater mark of your estimation of the value of industrial education.

If the people determine that their children shall first be put in possession of all their faculties, because they need the full power of manhood and womanhood as much in one pursuit as in another, it will be done. If the people see that the school is the only place where the foreign elements which make up our political body can be digested, assimilated, and Americanized, they will see the necessity for the largest and most generous provision for every department of public education.

Europe has been pouring a flood of immigration upon us from her poorer classes, compensating herself with the flower of our youth, to whom she offers superior advantages of education, with our scholars and capitalists, to whom she offers the accumulated gains of centuries of culture, where money has not been the only object of pursuit, and where men are content with slower and more moderate fortunes.

It is not extravagant to place agriculture at the head of industrial callings; it holds this place in the oldest scriptures, the oldest literature, and mythology. And such it is destined to become more and more as science introduces new variations into the songs of labor, and as education lifts the desires and aspirations of men out of materialism towards the gratification of higher wants.

FIG CULTURE.

BY I. N. HOAG.

The fig is the most delicious and healthy fruit known in the world. It requires a tropical or semi-tropical climate. It flourishes well in most all parts of California, producing and maturing two crops of fruit each season. The first crop grows on the last grown wood of the previous season. Having started to form in the Fall, the embryo fruit is checked by the first frost or cold weather, and remains dormant until the return of warm weather in the Spring. The small figs are then seen swelling before the leaves make their appearance on the trees.

With us this crop ripens in the forepart of July, and the fruit is generally larger than the next or Summer crop, though not usually so numerous. We have both the common blue or black fig and the brown *ischa*. The latter, when ripe, is of a greenish brown color, and we have had them average a quarter of a pound apiece as they were picked from the tree. We think this the most delicious kind of figs we ever saw. While it is very rich and melts in the mouth like a delicate peach, it is entirely free from that sickish taste always present in the blue or black varieties. While we have heard many persons say they did not like the fig because it was too rich, we believe we never saw one who did not like the brown *ischa* on first taste.

DRYING AND PRESERVING FIGS.

Figs have not heretofore been properly utilized in this State, for the reason that our people have not understood the proper method of drying or preserving them. Dried fruit generally, such as apples, peaches, plums, etc., are cooked before eating, and however thoroughly or hard they may have been dried the cooking softens them up and brings out the original flavor. Not so with the fig. This fruit is best uncooked, to eat as a dessert, and in preparing it for this purpose arises the difficulty.

It will not do to dry the fig to a crisp, as we do other fruit, for that renders it tasteless and useless. The drying process must proceed to a certain point and then must be checked and the fruit preserved for use. In other words, the water must be so far evaporated that the sugar in the fruit itself will preserve it or prevent decay. To determine exactly when the drying process should be checked requires judgment and experience, which can only be attained by actual practice.

Another great difficulty has to be overcome—to prevent the fruit when packed away from becoming wormy. Flies and other insects are very fond of figs when drying, and will lay their eggs in the cracks of the skins, and unless these eggs are killed your fruit will be destroyed and your labor lost. After a number of unsuccessful efforts to dry or

preserve figs—running through so many years—we were furnished with the following recipe, which we have followed since with satisfactory success:

"Pick the figs when thoroughly ripe, dry them on racks as you would other fruit, in the sun, for four or five days—or until the water they contain is thoroughly evaporated. If there is any dew, cover them nights. Then place them in a vessel perforated with holes, like a cullender, and dip them into boiling water for about one minute, after which again expose to the sun until the surface water has been evaporated. Then lay them into wooden, tin, earthen or other vessels and press closely, so as to exclude the air, and cover securely."

In this way we have preserved figs so that they were equal to the best imported. We would recommend all who raise this fruit to try the experiment. The scalding answers the double purpose of killing all insect eggs and softening the skin of the fruit so that the sugar will come to the surface, as may be seen on the imported figs.

Our experience, however, teaches us that it is better to allow the fruit, after being taken from the scalding water and dried one day in the sun, to be packed loosely in a fly-tight sack, and there to remain say a week or ten days—examining two or three times to see if they are mildewing—before packing closely in the boxes, as directed in the receipt. This causes the water more perfectly to evaporate and the fig to assume a better condition for packing, and induces the sugar to come to the surface more; giving them a more desirable appearance, and improving their keeping as well as eating qualities.

A dry warm sand is the best material on which to lay the fig for drying, as this retains the warmth accumulated in the day time well into the night, and dries the under side of the fruit as well as the upper, thus avoiding the necessity of turning them over so frequently.

THE BEST VARIETIES.

The white Smyrna fig is undoubtedly the best variety known for drying. This is the kind mostly imported from the south of Europe and the Asiatic Islands, and which generally appear on our fruit stands in small packages. These figs are generally imported in bulk, and frequently in rawhide sacks. At San Francisco, for this coast, they are taken out of these large packages and repacked nicely in small ones for retail.

We have as yet very few of the real white Smyrna fig in the State. There has been a spurious article here called by that name, and being an inferior variety, it has thrown discredit on the genuine fruit. The reason why the Smyrna fig is superior for drying consists principally in the fact of its being freer from that sickish taste so common to the blue varieties, and at the same time the skin is more delicate and thinner than the brown *ischa*.

It is also a plumper fruit than the latter variety, filling out better at the seed end, which renders it less liable to receive the eggs of insects. The brown *ischa* tree is apt to bear so full that the fig does not fill out and mature well. This can be remedied by trimming in the trees well each Winter, when the sap is down in the roots, and giving the tree a plenty of moisture and a good top dressing of well rotted manure each Fall. The blue figs generally are too rich, or so much so as to have a sickish taste when eaten fresh from the tree. This taste, however, does not adhere to them when dried and cured as above directed.

Of all the fruits kept for Winter eating, the fig is the greatest luxury for eating after the meal as a dessert, or between meals. It is true it is so rich one can eat but little, yet that little affords a great degree of enjoyment to those who have formed the habit of eating them.

CULTIVATING AND PRUNING THE FIG TREE.

Fig trees want plenty of room, and do not bear crowding. If crowded, they will not bear well, and the fruit will be inferior. The trees should be planted at least forty feet apart and trained low, so that they will send out horizontal limbs or arms. These may need propping to support the crop, but it will pay much better to train them in this way than to let the top run up high. The fruit will grow larger, mature better, and be richer.

PROFITS OF FIG CULTURE.

There is no doubt but, if properly managed, the culture and preserving of figs can be made in this State one of the *most* profitable branches of fruit culture.

The trees commence bearing young, and are among the most prolific fruit-bearing trees known. After the trees are say eight or ten years old, the annual crop can easily be made to yield ten dollars on an average. The writer has known them to do much better than this in this State.

SILK CULTURE.

THE COCOONERY.

The building to be used as a cocoonery should be regulated as to size so as to accommodate the number of worms to be fed in it. One ounce of eggs is said to contain from thirty thousand to forty thousand; but we think thirty thousand as many as will on an average hatch from the ounce. The smaller trivoltine or bivoltine kinds may contain more than this number, but we think the larger annual kinds will fall short of it. Taking thirty thousand as a basis, we may easily determine the space required to feed the worms from any given number of ounces of eggs. One hundred and fifty worms of full age or growth should have at least one square foot of shelf or table room, and one ounce will therefore require two hundred square feet, and this increased in proportion as the number of ounces of eggs to hatch is increased. No extra building need be provided for a cocoonery if there is a barn or other building on the place that can be spared for use during the Summer season. The shelving can be so put up that it can be taken down and laid away, and so kept from year to year. It is said that in many portions of Spain and in other countries sheep hoods are used as cocooneries, and that the smell of old manure is believed to be of no detriment to the health of the worms, but rather a benefit. So a horse barn or a hay barn can be cleaned out and used without danger to the worms.

VENTILATION AND TEMPERATURE.

One important matter in fixing up a cocoonery is to provide the means for plenty of ventilation. There should be an opening at the highest point to let the bad air escape, and openings at the bottom to let in fresh and cool air; and these ventilations should be fixed so as to regulate the circulation of air at pleasure. There should also be some handy way to wet down the floor (and this may be either boards or well packed earth) in hot, dry, and still days. The evaporation of water judiciously used may be made to keep down the heat two or three degrees in the building below what it would be without the use of water.

Though this is one of the most even or uniform climates in the world, yet the changes of temperature between the nights and days, especially in the open valleys and in the Summer season, are greater than in many other countries. Indeed, this regular daily change of temperature is one of the greatest difficulties in our opinion with which our silkgrowers have to contend. With our generally even temperature, if we could dispense with this daily change our climate would be perfect. In this respect the foothills have a great advantage over the large open valleys. To counteract this difficulty many propose building brick or adobe cocooneries. This expense is unnecessary; nor do we believe a brick building good for the worms. The atmosphere in a thick-walled brick

building accumulates too much chilling dampness, which is as detrimental as the changes of the temperature. A double wooden wall, with a false roof, would secure all the advantages and be liable to none of the objections to brick. But the same object can be much more cheaply and as effectually secured by covering the sides and roof of the cocoonery with tules. The tule makes a covering of the best non-conducting properties. Neither the sun, the wind, nor the dampness of a rainy day will penetrate a wall of tule a foot thick. The southern and western sides of the building and the roof only need be covered. The sun should always be allowed to strike the east side of the building early in the morning. It will shorten the time necessary to carry the worms through to cocoons from two to three days, and give them more certain health and better results. Two men can cut tule and cover a building fifty feet square, if they be handy, in two or three days. We speak in reference to this kind of covering from experience.

ARTIFICIAL HEATING.

With respect to artificial heat in cocooneries there are many opinions. In this dry climate we all know that the degrees of heat and cold are not so sensibly felt by the animal system as in a more damp climate. The dry air is a poor conductor of heat; but a damp atmosphere, on the contrary, becomes a good conductor, and hence in a damp climate we feel the changes of heat and cold much more readily. So with the silkworm. We should take these facts into consideration when determining the question of artificial heat for our cocooneries.

We think it may be well to have the facilities for heating at hand, but use them only sparingly. We would prefer that the thermometer should not fall below sixty nor rise above eighty degrees in the cocoonery. If it could be kept at the mean of seventy degrees it would be better. If the thermometer falls below sixty degrees and remains any length of time it may be best to use a little fire. But if it only gets down to that figure in the latter part of the night to rise at the approach of the sun, we would not start the fire. The Chinese on such occasions use a quick charcoal fire, which they carry through the building in a furnace. Heating by an open fire or blaze, as in a fireplace, is much better than by a close stove.

HATCHING THE EGGS.

Silkworm eggs will not hatch as a general thing with the thermometer below forty-five degrees. We say generally, because the bivoltines will hatch at a considerably lower temperature than annuals, and Japanese annuals will hatch at a lower temperature than French annuals. If your eggs have been kept in a place below forty-five degrees and you wish to have them ready for hatching in about ten days, change them to a locality where the temperature remains at about fifty degrees, and in a day or two increase the temperature to about sixty degrees, and then up to seventy, and keep it at this point until they begin to hatch.

Two or three days before hatching you will notice the eggs changing color from a brownish slate to a grayish blue, and the day before hatching to quite a light blue. The worms hatch from six to ten o'clock in the morning, and when you see the little fellows coming out, cut up some tender leaves in narrow strips and lay them around the edge of the paper to keep them from crawling off; also, some through the center. As the worms get out of the eggs, they start immediately for the leaves and begin to eat.

At about ten o'clock take hold of the strips of leaves carefully and lay them close together on a clean paper upon which you intend to feed them. It is better that the worms be pretty thick when small—so thick that the leaves upon which they rest will look black with them. When you have thus moved all the worms from the eggs in this manner, cut up some tender leaves very fine and sprinkle them over the worms. They will immediately leave the dry strips and go for the fresh cut leaves. Mark the worms, or the paper containing them, the day of the month, and feed them a little once in about five hours during the daytime, and if the nights are sufficiently warm, so that they continue to eat all night, keep the feeding up all night; but if the nights are cool, let them miss one feeding in the middle of the night, and then again at four o'clock.

Repeat the process of taking the worms from the eggs each day for about four days, and then throw away those that have not hatched, as they will not probably be very good after that. Be very careful to keep each day's hatching by itself, and keep the papers on which you place them separate, so they will not mix, as this will save a great deal of trouble in the future changes of the worm. Keep up the feeding with finely cut leaves each four hours, being careful not to feed them much more than they will eat until the worms are four days old.

FIRST MOLTING.

At this age their heads and the foreparts of the body will be a grayish color, and if the temperature has been kept up to about seventy degrees they will probably begin to lose their appetites, preparatory to going to sleep, but if the temperature has been a little lower than seventy they may eat, on the fourth day, more ravenously than on any previous day, and their sleepy time may be delayed until the fifth day, or even to the sixth. When they stop eating, stop feeding; as, if you continue to feed them, you will bury them up with cold, damp leaves, and thus lose many of them. They will sleep from twenty-four to thirty-six hours, and sometimes forty-eight hours. In this time their bodies shrink and the skin separates from the little black cap that covers the head, the cap falls off, and the worm wakes up and crawls out of his skin. This is called molting. When they have thus molted and waked up they are very hungry, but don't feed them any till all the worms on the paper have molted. Be very particular about this, so as to keep them all of the same size, and so that when they go to sleep the next time, which they will do again in about five or six days, all will sleep and wake at the same time.

By being very careful to keep the worms of the same day's hatching separate, and thus keeping each day's hatching uniform in size, and putting them all to sleep at the same time, before each molting, much work is saved, and the worms will do much better all through their lives. We should have mentioned that, as the worm approaches the time for going to sleep, it changes its color, always looking a yellowish sickly color at that time; and when it fully stops eating, it fastens itself to a piece of a leaf, and seems to be stiff and almost lifeless. In this condition they should not be moved, or fed, or disturbed in any way, but left entirely alone. When going to sleep, also, many of them get down under the surface leaves, so that you can see but few of them on the top. When they have molted, their color is changed, and they appear on the surface again and move about in search of food.

We had waited from twenty-four to forty-eight hours, and had seen them reappear on the surface of the leaves very much brighter and lighter colored, and anxiously moving about over and under each other, and at the slightest movement near them, sticking up their heads and swinging back and forth as if trying to reach something. And when we noticed them more closely, we observed that all the little fine black hairs that covered their tiny bodies before they went to sleep, had disappeared. These several changes are indications that the first age of the worm had passed—that they had shed their skins for the first time; or in other words, that they had passed the first molting and had entered upon the

SECOND AGE.

That we may be more certainly understood by new beginners, for it is for their instruction that we write, we will state here that the silkworm passes through five stages or ages from the time of hatching to the time of making its cocoon. The first age is from hatching to the first molting, and, under favorable circumstances—that is, in uniform warm weather and good feeding and care—the time of this age is from five to six days. The second age is from the first to second molting—a period of from four to six days. The third age is from the second to third molting—from five to six days. The fourth, from third to fourth molting—from six to seven days. The fifth, from fourth molting to spinning cocoons—from eight to ten days.

In good weather, all these changes are passed in this State in about thirty-two days. We have had the Japanese bivoltines make cocoons in twenty-eight days, and we have known the annuals to occupy forty days, when the weather was unfavorable.

In China, the Chinamen say that the worms frequently make cocoons twenty days old. The nights there are much warmer than here, and the worms eat as rapidly in the night as in the daytime, and grow much more rapidly and pass through the moltings more quickly than here, where the nights are cool.

We will give here a description of the appearances and changes of the worm as it approaches all the moltings except the first. The first indication is that the appetite begins gradually to fail, and the worms seem inclined to rest or lay quiet. When fed they will stir up and crawl on the fresh leaves and eat a little, but soon leave off eating and crawl over the food—not in search of something to eat but for a spot for rest, and some leaf or stem to which to attach itself for a long quiet sleep. When these signs are noticed, feed very lightly and with very finely cut leaves, so as to let the bed of leaves become dry and in good condition for the worms to sleep on, as they will pass through the molting much more successfully on a dry bed than on a cold, wet one. When the worms are asleep they must not be fed at all.

At these molting times is the greatest danger of trouble. If the bed of leaves is too thick and damp the worms are a long time in molting, and they are apt to come up from molting very unevenly as to time and to appear weak and feeble. This latter condition may be known by the great amount of fine web spun by the worms on the surface of the bed as they wake up and begin to move about. When you see this it is best to remove them from the old bed as soon as possible, even though you leave some still asleep to be thrown away. If, however, the bed is in good order and dry, the worms will wake up evenly, appear strong and vigorous and hungry, all other things being well. If the bed of leaves

turn black under the surface at any time it is an indication that they are heating or fermenting, and the worms should be got off of that bed as soon as possible.

CHANGING AND DIVIDING.

We have as yet said nothing about changing the worms from one bed to another, so as to keep them clean, and dividing them up and spreading them out as they become too crowded by their growth.

As a general rule the worms should be changed from the old bed about every other day. The best way to do this is, at the regular time of feeding, instead of giving them their food in its usual condition, cut fine, to select some very tender soft leaves and cut them up into strips, say half an inch wide, and lay them all over each bed of worms to be changed. As the worms grow larger these strips may be cut wider, and when the worms are still large whole leaves may be used for this purpose. The worms will leave the bed of fine leaves and climb upon these strips. Now watch them, and when they are generally on the strips, and before they have eaten them so much that they will not hang together, lift these strips up carefully one by one and lay them carefully down on a clean paper. If the worms are too crowded on the old bed, and they generally will be so about every other day, put those from one paper on two or more papers. It is very important that this matter of changing and dividing be properly and most rigidly attended to.

It may be of some assistance in aiding the judgment of new beginners to observe the following directions as to the space that a certain number of worms should be made to occupy during the different ages.

For convenient reference on this subject, and to assist in determining what number of eggs should be hatched or worms fed on any given number of trees, we will state here the amount of space, say one hundred thousand worms, or those hatching from about three ounces of eggs, should occupy at the close of each age and the number of pounds of food they will consume during each age.

One hundred thousand worms should be made to occupy, at the close of the first age, about twenty square feet of surface, and they will consume during that age about twenty-five pounds of leaves. During the second age they should occupy about forty feet of surface, and will consume about seventy-five pounds of leaves. During the third age they should occupy about ninety feet of surface, and will consume two hundred and thirty pounds of leaves. During the fourth age they should occupy about two hundred and twenty-five feet of surface, and will consume six hundred and ninety-five pounds of leaves. During the fifth and last age they should occupy about five hundred square feet of surface, and will consume about five thousand nine hundred and seventy-five pounds of leaves, or six thousand nine hundred and ninety-five pounds in all.

It will be seen by the above that while the worms occupy but little space, and eat but little during the first half of their existence, during the last half they spread out very rapidly and eat very voraciously. So that while there is but little work to attend and feed them during the forepart of their lives, the work increases very rapidly during the latter. After each molting the worms may be fed once or twice before they are removed from the bed where they have deposited skins, but not more than that. The first feeding after molting should be light and of tender food, as the worms are then weak and very hungry, and if fed too much then they are apt to hurt their appetites for food when they become stronger and should have good appetites.

TREE PLANTING.

BY J. S. HARBISON, OF SACRAMENTO.

The wrong way is too often practiced. The holes are dug—some barely large enough to admit the roots—and these even are often doubled up and crowded in such a manner that a portion of them decay prematurely, and the tree is easily blown over. Others are dug and the tree planted as a fence post should be—deep, with the earth well packed around them. In this case, certain death to many varieties of trees, such as the stone fruits, locust, etc., follows. Pear, Lombardy poplar, and some other varieties, endure this style of planting and frequently do well. Of late years some variation is made in the manner of preparing the holes. For instance, they are dug about three feet in diameter and as many deep. If in hard ground (alkaline it may be), these holes are usually filled with material hauled from a distance, a quantity of manure deposited in the bottom, and sediment is used to finish the filling. If in sandy ground, it is thought best to have some clay to mix with the sand. The clay is hauled—most likely it is black adobe, or that which is as poorly adapted to the requirements of tree life as the lean, washed sediment—the holes are filled, the trees planted—some deep, some shallow—it don't make much difference which, for no very good results are ever seen to follow such unworthy practices.

It is noticeable of late years that a much larger proportion of trees planted along our streets, as well as of fruit trees in our gardens and orchards, die or grow feebly than in former years; which is not chargeable to any change in the manner of planting, but to the fact that the ground has been tramped over, destroying its life-giving qualities, or exhausted of its fertility from long cropping. While our land was new and untrodden, trees planted in the most superficial manner mostly grew and did well, and when spared the murderous trimmings that have utterly ruined so many of the fine trees that formerly graced our streets, are to-day equal in size and beauty to those grown in any city of the land, and at the same time show us what must be done to restore the pristine vigor of our soils before we can hope to attain success.

Another cause has contributed not a little to the failure of tree planting of late years. The trees have mostly been brought from distant nurseries, and for the want of proper care in packing, or the entire absence of any packing, more or less damaged before they are planted. Formerly the demand was almost entirely supplied from our local nurseries. The latter having, to a great extent, been destroyed by floods, leaves most of the nurserymen without the means and the courage necessary to start anew and compete successfully with distant commercial nurseries, with whom it is difficult to compete even where no calamities have befallen.

The right way of preparing the ground, if for field or orchard planting, is this: The whole surface should be deeply and thoroughly tilled, either with a plow or by trenching with the spade. For street planting, or where there is but a limited amount of room, the whole of the ground the length of the row, and as wide as possible, should be deeply and thoroughly pulverized, and poor clay or sand replaced with rich friable soil, such as the successful market garden is sure to have, and cultivate carefully. In short, I would have my field or border prepared as one hole holding the entire population, being careful to provide proper drainage, so that no stagnant water should come in contact with the roots of the trees. Would avoid putting any gross, unrotted manure with the filling around the roots, but instead, would use large quantities spread widely on the surface of the ground, only avoiding near contact with the tree to avoid fermentation. Such application should be made as soon as the trees are planted, but never comes amiss at any season of the year. An annual top dressing just before the rains set in, first plowing the ground, cannot be too highly recommended.

Mulching the trees, as just suggested, is the only substitute for the frequent stirring of the soil. The latter must not be entirely omitted, and particular attention to prevent weeds growing must be given at all times.

With the exception of partially hoed crops, for two or three years after planting the ground should be left vacant, in order to allow of frequent cultivation. Wheat, barley, oats, grass, etc., are highly prejudicial to the success of trees at any time, and usually prove fatal to them if grown the first or second year after planting. One crop, even, may so far injure an orchard, though in bearing, that it will never recover from the injurious effects.

EVERGREEN TREE CULTURE.

BY E. F. AIKEN, OF SACRAMENTO.

Without wishing to deduct one iota from the importance of the immediate introduction, wide dissemination, and planting of all deciduous forest trees, I will call the attention of the Club, if you please, to the consideration of similar merits of the evergreen and coniferous trees of the forest, and will confine the few remarks I have to make to four or five of the leading and, in my opinion, most valuable sorts for cultivation here.

The evergreen, we all know, is a tree that has a perpetually green and living foliage. Some varieties have upright, needle like leaves, while others have a broad and drooping foliage. The first mentioned are all of the cone-bearing family or conifers; and this name they get from the form of the fruit, which contains the seed, and not from the general habit of the tree, as some suppose. The seed of this class is the most minute and delicate of all our forest tree seeds, and it is well known that they will not grow in their natural state only under peculiar circumstances and in certain localities, where the atmosphere is humid and to that extent that the seed will not fail to germinate and the seedlings grow readily. The seedlings are found in their natural state only in the depths of the forests, in cool and shady places where the searching winds and the fierce and scalding rays of the sun cannot penetrate. The first year of their existence they are exceedingly delicate, a strong ray of sunlight or gust of wind often destroying the vitality of thousands. Hence we are taught by nature the uncertainty of successfully growing evergreen trees from seed in our dry climate. It has required years of patient toil by experienced nurserymen, using every precaution known and gathered by long experience, together with the great advantage of the humid atmosphere bordering our great lakes, to raise the seedlings successfully. They are now raised in large quantities by parties in the East who make the business a specialty, and can be imported here through the mails at so little cost as to come within the means of all.

The most extensive growers of forest tree seedlings in the United States are Robert Douglass & Son, Waukegan, Illinois, and Pinney & Lawrence, Sturgeon Bay, Wisconsin. While these evergreen seedlings can be had so cheaply from the Eastern nurserymen, I would not advise our farmers here to undertake their cultivation from seed, as I am satisfied that failure and discouragement would be the result. It is a very difficult question to decide which of the two varieties—the evergreen or the deciduous trees—is of the most importance to civilization.

The whole family of evergreens and cone-bearing trees of our forests are valuable for timber, and are used to a greater or less extent as

regards their adaptability to the different branches of mechanical business. There are very few of all the numerous branches of mechanical business but what are more or less dependent upon wood as their material for manufacturing. How much more material is used that is derived from the evergreen and cone-bearing trees as compared with that originating from deciduous trees, I will not presume to say. We all know from experience and observation that the former is vastly in excess of the latter, and I believe it would be safe to say that seven eighths of all the wood made into lumber and consumed in other ways is the product of this class of trees. The white pine, Scotch pine, red pine, and Norway spruce, which I give you, as I think, in the order of their respective merits, are without doubt the most valuable sorts of this class for extensive and general planting, retaining their foliage, as they do, through the Winter, when deciduous trees are leafless. As trees for shelter for stock on the farm, as windbrakes for our orchards, vineyards, and grain fields, or as ornaments to beautify our homes, they cannot be excelled by any and have but few equals among deciduous trees in a commercial point of value. They are easily transplanted (while young) from the nursery, and of thrifty and rapid growth, requiring much less moisture in the soil, and will flourish over a wider range of climate and accommodate themselves to a greater variety of soils than most deciduous trees. They grow well on uplands, hillsides, and on sandy and unproductive soils, and I believe are well adapted for extensive cultivation on our treeless plains throughout the State.

That these broad plains are wholly devoid of evergreen trees now is no argument against the rapid and successful growth of evergreen forests if once established by the hand of man. And I would here urge upon our farmers the necessity of making a beginning of forest tree planting, even if it be but a few hundred trees. Start them in nursery form, if not prepared to plant them otherwise; plant seeds of the black walnut and locust, cuttings of the poplar, cottonwood, and white willow, if you cannot procure seedlings of a better class of trees. They will grow and make shelter, and break winds, for the better trees to come after—but plant as many as possible of the sorts before mentioned, including the European larch. The last mentioned, though classed among the conifers, is not an evergreen, as it sheds its foliage in the Fall. It has for several years been planted more extensively in Europe than all other trees combined, and is now taking the lead of all others among the planters of the Atlantic States. Bryant says: "The evergreen larch appears to combine the qualities of growth, symmetry of form, durability of wood and adaptability to a variety of uses in a greater degree than any other timber tree of northern latitudes." Loudon says: "The rate of growth of the larch in the climate of London is from twenty to twenty-five feet in ten years, from the seed, and nearly as great on the declivities of hills and mountains in the highlands of Scotland." This is a different species from the American larch, sometimes called hackmatack and tamarack, being unquestionably superior to the latter in every respect. It does not succeed so well in a damp atmosphere, near lakes and bordering rivers. Hence we may infer that it may be well suited to the dry atmosphere and soil of our plains.

The cone-bearing family of forest trees comprise some of the most valuable kinds of timber trees known, and there is no one variety of wood that is so extensively used in the great and increasing demands of civilization as the pine. It is rightly named the "king of the evergreen forest." Immense forests of pine were formerly found throughout the

northern portion of the United States, from Maine to Oregon, but now large forests of the old growth east of the Rocky Mountains are rare. In the old State of Maine, once so famous for her vast forests of pine and great foreign lumber trade, there are to be found but few of the original growth standing, and as a substitute for pine, hemlock and spruce are now extensively used, and in nearly all of the older States the scarcity of pine is severely felt.

Arthur Bryant, in his new work on "Forest Trees," says: "The State of New York, which not many years since exported great quantities of pine lumber, now obtains a supply for home consumption from abroad, and it may be safely estimated that two thirds of the full grown timber in Northern Illinois has been destroyed within the past eighteen years." With the ravages of fires that have recently swept through the timbered portions of our Northwestern States, and the increased demand for lumber consequent upon the rapid increase of population, the home supply for the future demands of civilization will soon be practically exhausted. Large tracts of the best timbered lands of our own State within a few years past have been monopolized by stock companies or speculators and passed into the hands of railroad corporations as subsidies; and this concentration of our great forests of timber in the hands of men who have no consideration but the mighty dollar to be coined out of them, must surely and speedily enhance the price of lumber. It is to be hoped there will be, during the present session of the Legislature, some systematic plan devised which will bring about extensive and wide-spread experiments in the different methods of forest tree culture, in all its different branches and forms, throughout the State. There is no question concerning our future prosperity as a State which will come before it more important or more necessary for its immediate action and fostering care than this. No efforts of private individuals will serve to so forcibly impress upon those engaged in agricultural pursuits the importance of extensively planting out forest trees as to have our Legislature take some action worthy of an interest of such vast importance to our State.

GRAPES FOR SPECIAL PURPOSES.

BY W. S. MANLOVE.

The subject of this essay, "Grapes for Special Purposes," opens a wide field for research and discussion, and one that I feel much reluctance in entering upon, knowing, as you and I do, that there is a great diversity of opinion on the adaptability of certain varieties to specific purposes. My only object in selecting this subject is the hope of contributing some useful information to my brother members—information practically acquired during the last twelve years, at a cost of much time, labor, and considerable pecuniary outlay. Starting in the business of grape raising without any knowledge of the cultivation of the vine, or of the best varieties to select from, I have found it required much care and attention, holding fast to those which proved themselves worthy, discarding others which have proved themselves worthless, although highly recommended to me by other parties. Just here I would say, that on the receipt of a variety with which I am unacquainted, I graft it on a vigorous stock, and thus test it much sooner than by the ordinary method of raising the vine from the cutting. I am aware that some varieties do not do so well when grafted, but in my experience there are but a few, and these comparatively worthless. In selecting the varieties to be discussed, the white Muscat of Alexandria heads the list. This I consider the *ne plus ultra* of the grape family. It is the most delicious, finely flavored grape that is cultivated in this State. Its large size, delicious flavor, and abundance of sugar or saccharine matter when fully ripe, render it, and deservedly so, the best table grape we have. On account of its firm, fleshy pulp, it is specially adapted to raisin making; no other grape approaching it in this respect. Indeed, Messrs. Thompson and Hyatt consider this the same as the Malaga grape, from which the famed raisins of commerce are produced. As a wine grape it is highly esteemed; making a sweet, highly-flavored dessert wine.

As a grape for distillation, when fully ripe, it is thought by those who have tested it to be superior to every other variety for brandy, imparting its musky perfumed flavor to the product of the still. This variety of grape seems to adapt itself to almost every variety of soil and climate in our State. Therefore, it is recommended as a valuable addition to all vineyards as a table grape, and as peculiarly adapted to the manufacture of raisins, wine, and brandy, and for transportation to our transmontane markets.

The Black Hamburg, for general cultivation, according to my experience, is only second to the Muscat. The Hamburg is easily propagated, grows thrifty, is free from disease except on lowlands, and is one of the most prolific and certain bearers of any that I have grown. It is the

best purple grape in the State, unsurpassed as a table grape, a good shipper, very rich in sugar when fully ripe, making a good quality of wine, and a large percentage of alcohol on distillation. Combining these good qualities, it is specially sought after by growers of the vine. To those who design growing grapes for market either at home or abroad, I would say there is no grape that bears transportation so well as the Red Lombardy or Flame Tokay. Being so well known it is needless to more particularly describe it. As regards its carrying qualities, it will carry from here to an Eastern market, when properly packed and handled, in as good condition as when picked from the vine. In proof of its being specially fitted for transportation to Eastern markets, I will state that in the month of November last I saw it stated in the *Hearth and Home*, a paper published by Orange Judd & Co., of New York City, that a carload of pears and Tokay grapes had arrived from California a few days before, the grapes being in good order and wholesaling at thirty-seven and a half cents per pound. The Flame Tokay is said by experienced wine makers to be a good wine grape, or to be valuable to mix with other varieties. The three varieties named I have selected from about thirty which I have tested. True, some of the other sorts are good grapes—such as the Blue Malvoise, Black Malaga, and others—but possessed of no distinctive qualities entitling them to be classed with the three first mentioned. For a wine grape alone there is no question in my mind but that the White Reisling is one of the most valuable; but the great objection to it is that it produces a very small amount of fruit—mine not averaging more than five or six pounds to the vine, although growing on the best land in the vineyard, Hamburgs yielding thirty to forty pounds in the adjoining rows. In presenting my views to the Club, as I have already stated, there is much in them that is not applicable to every location, and my advice to any one engaging in grape culture would be to find out what varieties do best in their locality and stick to them until experience shall demonstrate other more valuable varieties to cultivate. In conclusion, I would advise all persons who contemplate planting vineyards to embrace the present opportunity, as this is the most favorable season there has been for four or five years. Cuttings planted this season would insure a good stand and a vigorous growth—two things well worthy of consideration in the planting of a vineyard.

ALKALI SOILS.

BY ROBERT WILLIAMS.

In presenting this essay it will be my object to suggest some practical mode of neutralizing or extracting from our soil the substance called alkali, without discussing its chemical properties. Indeed, I am not aware that any chemical analysis has ever been made of soils impregnated with this alkali. It is evident, however, that its principal ingredient is potash, with a mixture of soda and salt. I am of the opinion that a limited amount of this alkali adds to the fertility of our soil. I think that the exceeding productiveness of the soil in California is attributable in part to the presence in limited quantities of this article; but, unfortunately, a great portion of our land—especially our low, flat lands—is too strongly impregnated with it. In such cases it becomes a nuisance rather than a benefit. It may seem strange to say that a good fertilizer could become detrimental to the fertility of the soil. It is the quantity, and not the quality, that produces the injury. Lime is an excellent fertilizer, and yet too much lime is certain death to vegetation, and I believe the same to be true with reference to alkali.

When we inquire into the source or origin of alkali, then we enter into the field of speculation where each man entertains his own peculiar views. There are various theories respecting its origin. My view is, that it is in veins or strata deep down in the earth, the same as salt veins, coal, or iron, or any other minerals; and I believe, like many other minerals, it has been brought near the surface by volcanic eruptions. Minerals of all kinds are found most plentiful in countries that have been thrown up by these volcanic eruptions; and this is especially true with reference to this alkali, as it is seldom, if ever, found in countries that have not been heaved up, and countries that have been the worst torn up by these eruptions invariably exhibit the most alkali. Now, in proof that it lies in veins, we often find springs of water strongly impregnated with it—so strong that the water cannot be used at all—while in the immediate vicinity may be found another spring, coming of course from another direction, which will be entirely free from any traces of alkali. The same is true of wells; one well may be good, pure water, and another well in the same neighborhood, or even in the same field, may be strongly alkalied. As to how it gets to the surface, my theory is as above indicated—that it is thrown up to or near the surface by these volcanic eruptions; then it becomes subject to the action of water. It is washed from the mountains, hills, and high plain land, and settles on the low lands, especially in basin-shaped places, where the water stands. In such places we find almost invariably the strongest alkali beds. Hence we often see alkali flats and alkali lakes on the plains. These alkali beds present the appearance of once having been

lakes, and no doubt they were, and the water from adjoining hills and plains ran into them and carried the alkali with it. As proof that water carries alkali with it, we seldom ever find alkali on the margin of a running stream; but go back from the stream till you strike the land not necessarily drained by the stream, and there you will find the alkali, if the water does not leach it out of the soil and carry it away with it. Why then is not alkali found on the banks of the stream as well as back from it?

But again, to be more practical, you may take earth that is so strongly impregnated with it that it will taste almost as strong as potash; take that same dirt, pulverize it, put in an old-fashioned ash hopper, and continue to pour pure water on it, and you will soon leach all the alkali out of the soil thus treated. But we are asked how it is that in some cases it will be found on the surface, and dig down one or two feet and no alkali is to be found. This may be accounted for in two ways. One is, that it might have been brought by water from elsewhere and left on the surface. The other is, that it was forced up from below by seepage water and attraction of the sun, till it reached the surface. There it comes in contact with a heavy soil of adobe character, unites with this soil, congeals, and forms a hard substance almost impervious to water, at the same time forming a source of attraction to draw the alkali from a loose, sandy subsoil. Hence the apparent freeness of the subsoil from alkali. My observations have been that a sandy surface, with a loose subsoil, will never be troubled much with alkali, because as the water sinks down it carries the alkali with it.

Again, we are asked why it appears in the Summer and Fall, when the surface is dry. We answer, it has either been retained there by the hard surface referred to above, or is drawn up by the same attraction that draws the moisture from below in the Summer. Now to sum up the whole theory. Believing as I do that water will carry alkali with it, I necessarily believe that thorough draining is the only practical way of reclaiming alkalied lands; and it as necessarily follows that land that cannot be thoroughly drained cannot be reclaimed. We may neutralize the alkali to a certain extent by thorough cultivation, by heavy manuring, or by cropping it to beets. Beets will succeed on alkalied land better than any other crop I know of, and no doubt absorb and extract a considerable portion of the alkali; and if the alkali exists only on the surface, with no substrata of it below, nor no water to carry it on again, you might get your land comparatively reclaimed by a succession of beet crops. But the same cause that brought the alkali to the surface once will do it again, unless the connection is broken. This, I think, can only be done by drains. I would suggest underground drains. These, the most expensive at the start, will be much the cheapest in the end, as they more thoroughly drain, and at the same time give a free use of the land. It matters not whether the rain washes the alkali down, or the seepage forces it up. In either case the ditch will carry it off. These same drains, if properly arranged, may be used in the Summer for irrigating purposes; and here let me remark, that it will not require more than one fourth the water to irrigate in this way that it requires if put on the surface in the usual way. I think the best and cheapest material for these drains is the earthern pipe, called tiling pipe. Clark, who keeps the pottery near Sutter's Fort, makes it all sizes, and in large quantities. A sample of the remarkable effect of underground irrigation may be seen in his gardens. And now, in conclusion, permit me to say that if I have, in this humble essay, dropped any hints that will be of use to the public, my object will be accomplished.

UNDERGROUND IRRIGATION.

BY I. N. HOAG.

The subject of irrigation has very naturally attracted a great deal of attention during the past year, in consequence of the great scarcity of the natural supply of water.

Schemes for irrigating large tracts of country in many portions of the State have been projected, and some are in a forward state of completion. Much good will, undoubtedly, result from the successful operation of these enterprises. But our object now is to call attention to a plan for underground irrigation, which we think most admirably adapted to irrigating vegetable and kitchen gardens, and small orchards and nurseries, particularly on the dry prairie or grain districts of our State.

Every farmer, gardener, or nurseryman will at once see and comprehend the reasons why water applied, say one foot below the surface, will do more good to growing plants of all kinds than if applied on the surface of the soil. These reasons may be stated briefly as follows:

First—It induces the roots to work downward to meet it, thus giving them a deeper and better hold on the soil, and enabling them to secure a greater amount of the plant-sustaining elements.

Second—Water thus applied softens up and loosens the whole ground, and does not, like water applied to the surface, induce a crust to form on the surface.

Third—Much less water will be needed, if applied underground, than if applied on the surface, because the evaporation will be less.

Fourth—There can be no danger of the sun scalding plants thus irrigated, while this is the great drawback or danger attending surface irrigation in the Summer.

NATURAL EXAMPLES.

For a striking illustration of natural underground irrigation, we would refer to the lands about the confluence of the Sacramento and San Joaquin rivers, especially to Sherman and Twitchell Islands. At high tide the water in the rivers or sloughs surrounding these islands is as high, or higher, than the surface of the soil, even in the Summer season, but at low tide it is from three to four feet below the surface. Thus the soil is kept constantly irrigated from below. To this fact are these lands indebted for their great productiveness and natural advantages. On these lands the seed time and harvest are coëxistant and constant the year through. All varieties of vegetable seed may be planted here in the middle of Summer, and they will come forward and mature as rapidly and perfectly as those planted in the Spring.

Thus is given a double value and a double productiveness to these lands. The water becomes a constant fertilizer to the land and stimulant to the growth of the plants. Now if it was in the power of man to place all the lands in this State in a position so that they could be thus perfectly and constantly irrigated by bringing the water up to the surface to be controlled at will, what a value would be thus added to these lands. The productions of the State under such a system of irrigation would be beyond estimate. If each farmer throughout the country could thus irrigate even one acre, he would increase the value of that one acre from eight to ten fold. However dry and parched the general lands of his farm might be, he could of this one acre make a constant garden, and thus surround his house with a perpetual Eden, from which at all times of the year he could supply his table with all the luxuries of the temperate and semi-tropical zones.

IT CAN BE DONE.

That is, every farmer in the State can, if he will, and with very little expense, thus irrigate one acre, more or less, and we care not where he may be located; only provided that he has land of medium fertility, he can have an excellent and constantly producing vegetable garden, and a good thrifty growing and good bearing orchard of all kinds of fruits. The driest and most shallow-soiled red prairie land can be made to produce as abundantly as the best and deepest river bottoms.

ARTIFICIAL EXAMPLE.

For the proof of what we say, we will give the following facts: N. Clark, of Sacramento, about half a mile east of Sutter's Fort site, has a piece of land familiarly known in that neighborhood as hard pan land. The soil is a stiff adobe, some of it a pretty sticky clay of a reddish cast, and not over ten inches deep. He has been trying to grow an orchard and garden on this land for a number of years, by surface irrigation, with very poor success. Indeed his efforts for a garden may be said to have been a failure. Last season he noticed a small strip of peas, which he had planted, were growing very thriftily, and matured a good crop, while all the rest of the peas planted at the same time, and cultivated and irrigated, so far as he could see, in the same manner, produced nothing.

He determined to know the cause of this strange fact, and commenced an exploration with a shovel. He soon developed a gopher hole about a foot underground, running parallel with and very nearly under the row of peas that had proved so much more thrifty and prolific than the balance. Into this hole the water had penetrated and from thence had worked its way up to the roots of the peas, which had also penetrated deep into the soil to meet it. This suggested to Mr. Clark a new idea, *underground irrigation*, and he immediately determined to put this idea to a practical test. This season has afforded him an excellent opportunity to do so. Being a manufacturer of crockery and various kinds of earthen and tile pipe, he made up a lot of the latter with a two-inch bore, in pieces one foot each in length. His trees were in rows sixteen feet apart. He dug a trench about a foot deep in the center between these rows. In these trenches he buried this pipe, laying the pieces end to end, leaving

the ends the eighth of an inch apart. Over these little broken joints or openings he threw pieces of broken crockery, so as to permit water to run out and prevent the earth from working in. Across one end of the piece so laid with pipes he set pipes of the same kind and length upright, so that each upright pipe connected with the end of one line of horizontal. He then dug an open trench so as to conduct the water into these uprights, and his irrigating plan was complete.

Into this open trench he turned the water from a pump worked by a windmill and drawing water from a bored well. It worked well, and in a few days his place was completely irrigated so as to show a dampened appearance on the surface. He planted peas, beans, tomatoes, and many other kinds of vegetables between his trees—all of which grew most luxuriantly and produced abundantly. His trees made a magnificent growth and produced a good crop of excellent fruit. In fact, the whole experiment was a most perfect and satisfactory success.

In addition to the advantages of underground over surface irrigation, we would enumerate the following:

First—The same tubes used to conduct the water under the ground may be used to convey any kind of manure to the same locality in a liquid state. To accomplish this you have only to make the reservoirs at the head of the piece of land to be irrigated and manured of sufficient capacity, and fill it with manure; the water, passing through this manure, will extract from it its fertilizing properties, and conduct them, in a liquid state, to the roots of the trees and plants. Thus all the strength and value of the manure will be saved and applied in the best form at the point where most good will result. None will be wasted by evaporation, and all danger of the introduction of weed seed into the soil will thus be avoided. Any variety of manure desired to be used, from the coarsest stable manure to the finest commercial varieties, may thus be utilized to the best advantage.

Second—Another advantage of this mode of irrigation is, that while introducing the water you also introduce the air under the ground, thus enlivening the soil, and at the same time extracting from that air its very important and valuable fertilizing qualities, and applying them directly to the roots of the growing vegetation.

Again, in the Spring or early Summer, the air is much warmer than the soil, and the warm air thus penetrating the soil and working around the roots acts, to a certain extent, like a hot bed, and brings forward the early vegetable as no surface irrigation will.

Third—The same sort of tubing or pipes used for irrigating the land in times of drought will answer the purpose of an underground drainage system in a very wet season.

To accompl.sh the latter object you have but to open a ditch at the opposite end of your garden from that into which you introduce the water in the pipes, so that the surplus water in the soil will run off. It will then work into the pipes at the openings and run through them into the drainage ditch, and thus your garden will be relieved of too great a supply of water, through the same system that irrigates it. For garden purposes this drainage operation is almost as important as the irrigation, and considering that both operations can be accomplished at the same expense and by the same system, we think it worth while that all our farmers throughout the grain districts should give it a trial. A small piece of ground, thus prepared and cultivated as a kitchen garden and fruit orchard will be worth more to the average grain farmer, taking one season with another, than ten times the same amount cultivated in

the ordinary way, and devoted to the ordinary crops. We would urge this consideration, at this time, for the reason that this is the season of the year when farmers should be at work at their gardens, whether they introduce this system of irrigation and drainage or not.

Fourth—This underground irrigation will, in our opinion, prove one of the most effective and economical means of reclaiming alkali soil or of freeing the soil of a superabundance of this offensive property or ingredient. Water, passing over soil, dissolves the alkali that is on the surface and carries the solution away with it. This is is evident from the fact that in all alkali districts, the low places, where the water accumulates and remains until carried away by evaporation, are strongly impregnated with this material.

Taking all things into consideration, the underground irrigation for all small plots of land, such as gardens and small orchards, is the cheapest, as well as the best.

Pipe, two inch bore, can be had at five cents the running foot, and one and one fourth inch bore at three cents the running foot. Water will readily soak eight feet each way from the pipe, so that a line of pipe once in sixteen feet through a garden will be a plenty. The cost of thus putting it down is but a trifle compared to the advantages we have shown will accrue. The pipe can be had of N. Clark & Co., of Sacramento, or can be made by any other similar manufacturing establishment.

Those who would have good gardens on dry land will do well to try the underground irrigation.

This system of irrigation and drainage will act to free the ground of the alkali, in both capacities—that is, when used for irrigation, as well as for drainage. In the dry season, the water being introduced below the surface, percolates upward, bringing the alkali in solution to the surface, and the action of the sun and air upon it neutralizes it—or evaporation carries much of it off in the air. In the wet season the water draining from the soil and running away through the pipes carries the alkali with it. Thus with this system of pipes we are at all seasons improving our land and benefiting ourselves.

FRUIT CULTURE.

BY ROBERT WILLIAMSON, OF SACRAMENTO.

The subject of fruit culture is one fraught with deep interest to every thinking mind, and is destined to be a pleasing and profitable study to the end of time. The fruit of the tree and vine is one of God's best gifts to men. But like many of His beneficent gifts is too lightly appreciated and most sadly neglected by the great mass of the people. But the few who appreciate this boon of Heaven and have given the subject the consideration which it merits, have found in it a source of pleasure and a store of knowledge rarely found in the study of any other subject. This study is inexhaustible in itself. A man may study it from youth to old age, and it is ever new and pleasing. The more we know of it the more we admire it.

WILL IT PAY?

But let us turn from the amateur's view of the subject and look at it from a financial standpoint. We are asked if it will pay? This (with the masses) is the all important question. This question we would answer in the affirmative.

Fruit growing (when intelligently followed) will pay in any part of the civilized world, and especially in California. Not that we have a better market than elsewhere, but because we can produce a greater variety in larger quantities and with less labor than any other one portion of the globe with the same area of land. This I am aware will sound like exaggeration. But to convince ourselves that such is the fact, we have only to remember that we have in California a greater variety of climates and soils than can be found in any other country of equal extent. Not even the Republic of Mexico or our sister States and Territories on the Pacific Coast, can lay claim to all the advantages which our geographical position gives us in this respect.

OUR CLIMATE.

In California we have a climate varying almost from the extreme of heat to the excessive cold, with a soil equally as varied. Hence we need not go beyond the climate of our own State to find a locality where we can successfully grow the tropical fruits, or to find another locality as well adapted to growing the fruits peculiar to the northern climates. The intelligent fruit grower has only to decide what he wants to grow and then select his locality, make a judicious selection of varieties, plant them properly, and give them proper attention afterwards, and he may count on certain success. But he who goes to work to plant a market orchard on a soil or in a climate not adapted to the fruits he intends to grow, or makes a wrong selection of varieties, or takes no pains to plant properly, or takes no care of his trees or vines after they are planted,

may with equal certainty count on a disastrous failure. Then he is prepared to proclaim to the world that fruit growing will not pay in California.

I am aware that there is some apology for many failures that have occurred in this branch of business. We have people here from all parts of the world. They came here with their home notions of horticulture and went to work in accordance with these notions, and after years of unsuccessful toil were forced to abandon their favorite plans and perhaps their favorite fruits.

A man to be successful in growing fruits in this country must either have a practical knowledge of the business or must avail himself of the benefits of his neighbor's experience.

FRUIT MARKETS.

Now for our market facilities, present and prospective. We have a fair home demand. There is, perhaps, no place in the United States that consume so much fruit (in proportion to numbers) as do the people of California; and good fruit properly handled has always borne a living price in our markets, and prices have been steadily advancing for the past six years, notwithstanding the thousands of acres that we are annually planting in trees and vines. We believe our market will continue to grow better. We are opening up new markets almost daily on all sides of us. We have, on the east and north, the State of Nevada, and the Territories of Arizona, Utah, Colorado, Wyoming, Idaho, Dakota, and Montana, embracing territory larger than all the States east of the Mississippi river; and this immense country is little else than one vast field of minerals. These mines must and will be worked, and they must and will come to California for the great bulk of their fruits, because they have neither the climates nor soils for extensive and varied fruit growing; and we are more adjacent to them than any other good fruit-growing country.

The same is true of the vast lumber districts north of us. They must have fruit; and where can they go for variety and quality but to California? Moreover, we believe the day is not far distant when there will be a lively demand from the Asiatic continent for our dried and preserved fruits. And if our two years trade with eastern cities has already favorably affected our fruit market, what will be the effect of all these other markets when fairly opened up? Will not fruit growing become almost the paramount interest of the State?

FRUITS FOR PROFIT.

As to the best kinds of fruit to be grown for profit, we would remark that all the southern portion, and many localities in the more northern counties of the State, are well adapted to growing oranges, lemons, limes, olives, dates, filberts, cocoanuts, almonds, and English walnuts. To these we may add figs, prunes, and grapes—the three latter will succeed well in most parts of the State. All of the above named fruits (either green or dry) we are importing in large quantities. It would perhaps not be too much to say that the people of the United States are paying annually to foreign countries the enormous sum of one hundred million dollars for these very articles, every one of which can be successfully grown and prepared for market in our State; for there can be no climate better adapted to drying fruits than ours. In addition to the above, we can

grow, in most parts of the State, all the other fruits, from the apple to the strawberry; and in the Sacramento Valley we can perhaps grow a greater variety of fruit than in any other portion of the State. Our climate is especially adapted to growing the leading fruits, such as grapes, pears, plums, peaches, cherries, figs, and apples, and the foothills, or low mountain ranges, are peculiarly adapted to growing the apple. In these districts we can grow as fine winter apples as can be grown in Oregon or the Atlantic States, and they always command remunerative prices in our local markets.

FRUITS FOR GENERAL CULTIVATION.

I would recommend the pear, plum, and grape, as they succeed remarkably well in all parts of the State. The pear and grape can be successfully shipped to eastern cities and sold at remunerative prices. The grape can also be converted into wine or raisins, and find almost a world-wide market. The plum also may be dried and shipped to foreign markets at a good profit. We can find a remunerative market in the East for all the plums that we can produce. As to varieties of fruit that we would recommend, it will be impossible, in this essay, to give them all even a passing notice; we shall, therefore, only mention a very few of the leading sorts.

As raisin grapes: the White Muscat of Alexandria, the White Malaga, and White Muscatelle; table grapes: Black Malvacia, Black Hamburg, and White Muscat; wine grapes: the White Reisling, Yellow Orleans, and Zinfindel; many other varieties might be mentioned. Shipping grapes: the White Muscat and Flame Tokay stand at the head of the list. There are others that ship well, but none we think equal to the two above named. Shipping pears: Bartlett, Easter Burree, Vicar of Winkfield, and Glout Morceau; many other varieties, however, will ship well.

We would here suggest as to varieties, that it would be well for parties who can do so conveniently to experiment with seedings. All our varieties of fruit were originally produced from seed, and it is not unfrequently the case that from one hundred or two hundred seedlings we may get one or two fine and distinct varieties. Fruits thus produced are generally well adapted to the climate in which they originated. I have in my nursery four new varieties of apple, and six of peaches, all of California origin; they are all worthy of extensive cultivation, especially the latter; and some of them I consider superior to any of the old standard varieties.

FRUIT CULTURE.

BY C. W. REED, OF YOLO COUNTY.

The subject of fruit culture is one upon which so much has been said and written that I cannot expect to add anything that will be new. But if I can say anything that will prompt others to avoid the mistakes that I have made I shall have the satisfaction of having done something to benefit the great industry of fruit culture in California. I am so little accustomed to giving publicity to my own thoughts that for me to review the subject of fruit culture in the briefest possible manner I fear will prove tedious. What I shall say principally will be not as an amateur, but as a practical operator from my own experience, during the past seventeen years in California. When I admit that I have made many blunders, you can realize the fact that I have paid very dearly for my want of correct information at the outset, and if any new beginners can profit by my suggestions it will be a source of gratification to me. I am fully impressed with the idea that California is destined to occupy the very front rank as a fruit producing country, and I hope the knowledge that will be disseminated through this Club will help develop this great industry and make it a source of profit to every one engaged in it. That the soil and climate of California are capable of producing more kinds of fruit and in greater perfection than any other country with which I am at all acquainted is a fact concerning which I do not entertain the shadow of a doubt; and when I consider our almost total exemption from insects and the diseases so prevalent to fruit trees elsewhere, I feel constrained to charge the blame upon the producer whenever I see a poor specimen of fruit of any kind. Almost every kind of fruit can be grown to perfection within the limits of our own State under proper cultivation; but in this business, like every other, it is all-important to study adaptability of soil and climate, and when they are not specially adapted to the particular culture proposed, seek a new locality or set yourself vigorously at work to correct the defects at the very outset. If the condition of your soil is not just what it should be, spare no pains or reasonable expense to place it in proper condition before planting your trees, and where the climate is not decidedly favorable, you can adopt a mode of culture which will by degrees do a great deal towards acclimating your trees to suit different degrees of heat or cold. These modifications can be wrought by culture and a proper knowledge of the trees you desire to cultivate, and that alone.

The leading idea I would like to impress upon every one who is engaged in fruit culture is, that the small additional outlay between thorough and indifferent work at the time of planting trees is so trifling, when considered in connection with attending results, that it seems to me it is only necessary to be understood to insure observance. A hole two feet in diameter and eighteen inches in depth may seem ample in which to plant a tree, but the additional cost to dig said hole four feet

in diameter and four deep will be paid for tenfold before the third crop of fruit has been gathered.

Another fatal blunder into which I have sometimes fallen, and one I earnestly recommend all to avoid, is the crowding together of too many trees upon an acre of ground. Ample space insures better fruit, and a larger profit will be secured, even though the aggregate yield should be less in point of quantity.

To be eminently successful in any pursuit in life, it is absolutely necessary to possess a thorough knowledge of the business engaged in; for ignorance upon any point, however trifling, may suffice to cause a financial failure, and ultimately destroy your enterprise. This applies generally to all business, and especially to fruit culture.

In the learned professions, if a man assumes to practice before he has acquired sufficient information to entitle him to a diploma from professors of acknowledged skill, he is at once and by common consent shunned as a "quack" or "impostor." In the mechanic arts one must by years of toil and application acquire such absolute knowledge of his craft as to impress the common observer of his skill as an artisan, or he is at once dubbed a "botch." In agriculture and horticulture there is, unfortunately, no standard of excellence fixed, and success alone, from one's own individual efforts, must determine whether he is a "quack" or a "botch."

IMPORTANCE OF KNOWLEDGE.

Let all who are engaged in the noble work of tilling the soil strive for a higher standard of proficiency before individual responsibility is assumed as an agriculturist or horticulturist. Let us learn patiently from our own experience and the experience of others till we acquire sufficient skill to avoid mortifying blunders and the financial distress which generally follows misdirected efforts. I have labored hard for seventeen years, and am only now just beginning to learn the rudiments of my business and to comprehend how it may be made profitable; and I will here remark that the profits do not depend half so much upon the amount of work done as the manner in which it is accomplished. One good, sound, healthy tree, which has been properly lifted from the nursery without bruising or mutilating its roots, if properly planted in the orchard and cultivated up to the time of fruiting, will prove more profitable than three trees that have received such attention as is ordinarily bestowed. I do not say that the one tree will yield as much fruit as the three, but that its product will yield a profit equal to or greater than the three.

In order to make fruit growing for market profitable, too much care cannot be bestowed upon the varieties to be selected—always bearing in mind that there are at least four essential considerations:

First—Thrifty growing varieties.

Second—Regular bearing varieties.

Third—Fruit of good quality and high color.

Fourth—Varieties that can be transported to market in perfect order.

PLANTING ORCHARDS.

In planting an orchard it is all important to select in the nursery only healthy and well grown trees, and in transplanting if the roots become seriously injured or mutilated it will be true economy to throw the trees away at once, rather than attempt to restore them to health and vigor

after transplanting them to the orchard. The proper planting of trees is, in my judgment, by far the most important step in connection with profitable fruit culture; and yet, so far as my observation extends, it seems to be the least considered. Whether we do not understand the great strain upon the vitality of a tree in being transplanted, or whether we cannot comprehend that anything suffers that does not cry out with pain, is a matter that everyone must decide for himself. Had I never been guilty of the same folly myself, it would now, with my present ideas, puzzle me very much to conjecture the motive which could prompt such an utter disregard of a subject pregnant with such important results.

I had planted a great many thousand trees for myself before I fully realized the great loss I must necessarily sustain in consequence of my imperfect work; but I assure you I have not recently been guilty of such folly. If I err at all now, it will be on the other side, for I can hardly conceive it possible to bestow too much labor and care in planting trees. I will not now permit a tree of any kind to be planted on my grounds until the hole has been dug from four to five feet in depth, and at least four feet in diameter, whether the land is hard or soft, wet or dry. To remove that much earth, and refill the hole again with the best surface soil or compost, I consider decidedly necessary in order to grow a tree to the best advantage. Whenever you have observed closely the difference between the product of a tree which h s been thus planted and one that has only been tolerably well done, I can assure you that you will never again consent to have such work slighted in the least, for the cost of the extra work at the planting period will be found absolutely insignificant compared to the growth and product of your tree in after years. I wish still further to impress upon you the importance of leaving ample space between your trees, to prevent their becoming crowded, for you must not expect large crops or fruit of good quality unless you provide for an abundance of sunshine and air between the branches. It has been a fatal mistake with a large amount of the orchards that have been planted in this country, and I do not consider that trees that are crowded in an orchard have half the value they would have if they had plenty of room.

PRUNING AND TRIMMING.

Judicious pruning and trimming trees, and at the proper time thinning out the fruit from trees that are inclined to overbear, are matters of the utmost importance in making fruit culture a profitable business. You will find more profit in raising one hundred pounds of fruit that is worth two cents per pound, than in raising two hundred pounds that is only worth one cent per pound.

But thorough pruning does not mean the murderous habit, indulged in by many, of sawing off a certain amount of wood that happens nearest the ground. On the contrary, it means a systematic manner of simply thinning and shortening the small branches, and cutting out the weak ones, leaving the tree in a symmetrical and uniform shape. Large branches should never be taken off unless absolutely necessary.

Judicious thinning out of fruit from overbearing trees is of the greatest importance, as it enables the remaining fruit to mature perfectly, and saves the tree from breaking down or becoming stunted by too great a strain upon its vitality. All such labor and care will be amply

requited when the final reckoning is made after the crop has been gathered.

MARKET FOR FRUIT.

The question of a market for fruit has been a serious consideration with our fruit growers in past years. The fertility of our soil and climate enabled us to raise fruit in such great abundance that we had no market within our own borders for the half that could be produced, and labor was too high for fruit growers in California to dry their surplus, with the difference in exchange between gold and greenbacks, for successful competition with the eastern markets. But within a few years everything has been changed; the completion of the great overland railroad has brought us in such quick communication with the vast mining regions of the Territories, that we can supply them with every variety of fruit grown in the country, and they must ever remain entirely dependent upon California for their supply. The overland railroad has also opened up the whole United States for a market for California fruits—both green, dried, and canned. I have shipped fruit grown by myself to New Orleans and Boston, with satisfactory results. I have made one shipment of green pears to London, but have not yet received returns, and cannot tell what the result has been. I have seen California dried fruits and canned fruits selling in the markets of New York and Boston at prices that would pay the producer well. We have shipped from California by the Pacific Railroad, during the year eighteen hundred and seventy, seventy full car loads of fruit; and during the year eighteen hundred and seventy-one, there has been shipped one hundred and fifteen car loads of fruit (a year of extreme drought). The most of this fruit has been pears, and shipped east of the Rocky Mountains and as far as Chicago, St. Louis, New Orleans, Memphis, Philadelphia, New York, and Boston. The business of shipping green fruit alone should continue to increase until we can send one thousand car loads annually from California. There is a market in the East, and we can send that much with a profit to the producer with a little modification in present rates of freight.

But recently the doors of China and Japan have been opened to commercial relations with this country, and the increase in exports from San Francisco alone to those countries has increased during the past year over six millions of dollars; and I believe our fruit product in future years will be an important article of commerce with those countries. Thus we see before us an almost unlimited market—a market exclusively our own—greater than any other locality within the borders of the United States, and with facilities for producing fruit unequalled by any other country. What greater inducements can fruit growers desire for enlarging and extending their operations with a certainty of meeting a suitable reward for their labor?

VARIETIES FOR SHIPPING.

Now I wish to add, in this connection, that there are but few varieties, compared with the many, that will be profitable for shipping or drying, and no one must expect they can ship any kind of fruit they happen to grow, with satisfactory results; on the contrary, you cannot ship anything but fruit grown to the greatest perfection, and which costs no more than the poorest fruit, grown in the most inferior manner. Already there has been shipped a great deal of inferior fruit to the Eastern

cities, fruit unfit to be placed in the nearest market at home. This is suicidal to the best interest of every one engaged in fruit culture. We are destroying our own reputations, preventing the increased demand for our fruit, and discouraging those who are endeavoring to open up a market thousands of miles from home. This is all wrong. If your business is worth anything, it is worth doing well. There is no excuse for growing and sending inferior fruit to market in California. In regard to the kinds of fruit that can be grown and that are adapted to the climate of California, I will only mention those that have come under my own observation, commencing with the apple, which is a world-renowned fruit, and is grown successfully all over the State, and is more universally used throughout the greater portion of the United States than any other. It is a fruit, however, that I think more unequal in quality and time of ripening than any other, in the different sections of the State. The great difference in soil and climate has a wonderful effect upon the same variety of apple in different localities. Therefore, in order to have apples in their greatest perfection, we must have varieties suitable to the locality in which they are grown. Varieties most desirable to cultivate about Sacramento, or in the surrounding country, may not be the best for the mountains, or near the seacoast. The apple succeeds well upon a variety of soils, but I think can be grown with less care upon the alluvial soils of our river bottoms. It does well upon the red lands, in the gravelly soil of the foothills, in the mountains, around our bays, and along the seacoast, but I think attains a greater perfection at an altitude of from three thousand to four thousand feet through our mountain ranges—more particularly the Winter varieties of the Northern States. Apple trees should be planted at a distance of at least thirty feet apart each. If you plant as close as most of the apple orchards in the State have been, your trees lose at least half their value when they have attained the size and age to be really profitable. I will here remark, in regard to all kinds of fruit trees, if they are not planted upon soil that will afford a sufficient amount of moisture to promote a thrifty growth with good cultivation, irrigation becomes a necessity. Apple trees can be grown in eight years to produce from five hundred to one thousand pounds of fruit to the tree.

BEST VARIETIES—APPLES.

As a rule, red apples bring a better price in the market than any other color. I have found the following varieties to succeed well about Sacramento: Early Harvest, Early Strawberry, Red June, Red Astrachan, Summer Bellflower, Summer Rose, and William's Favorite. The above are early varieties. I do not think it would be advisable to cultivate the Early Harvest extensively for market. For Autumn varieties, the Alexander, Duchess of Oldenberg, Equinteley, Fall Pippin, Gravenstine, Maiden's Blush, Jonathan, King, Rhode Island Greening, and Yellow Bellflower are among the best. These are all Autumn varieties in this locality, although some of them are Winter varieties in other sections of the country. For Winter varieties we have the Yellow Newtown Pippin, which I believe is a greater favorite all over the State than any other; the Ben Davis Spitzenberg, Rawles, Jannet, Swaar, W. W. Pearmain, and American Pippin are all good keepers. I presume there are many other varieties fully equal to these. There are also some seedling varieties that have been produced near Sacramento that I think will prove valuable, both as to fine quality and as good keepers; and I

would suggest to this Club that they extend a general invitation to those having seedling fruit of any kind to exhibit specimens, with description of habit and growth of tree, and that a legitimate name be given to all such varieties as are found worthy of general cultivation.

PEARS.

The pear has perhaps attracted more attention during the past two years than any other kind of fruit in California, from the fact of its having become an article of commerce with Eastern cities. I believe the pear grows more universally perfect all over the State than any other kind of fruit, and that it can be grown to perfection on a greater variety of soils. The pear tree grows well upon soils strongly alkaline, where hardly any other kind of fruit can be made to mature without first neutralizing the effects of the alkali. It thrives on dry land, and will stand more water without injury than any other fruit tree with which I am acquainted. A loamy soil with clay bottom I regard as the very best soil on which to grow standard trees. Dwarf trees should not be cultivated except on alluvial bottom lands, if you desire profit or satisfaction from their culture. Standard trees should not be planted less than twenty-five feet apart each way, and dwarf from eight to ten—I prefer ten. Many varieties of pears are inclined to overbear in this country, particularly those that only produce crops alternate years, so that it becomes an absolute necessity to thin the fruit on such trees. There is no excuse for growing inferior pears in any portion of California, except bad culture. There is more skill required in gathering pears at the right time and ripening them so they will attain their greatest perfection than any other kind of fruit. It is difficult to describe just when to gather the crop. An expert will tell by the appearance of the fruit, but ordinary fruit gatherers cannot, unless they remain on the trees too long, which will not allow of their being shipped at any great distance; and if they are gathered too soon they shrivel and lose their flavor. The parting of the stem from the spur when lifted by the hand, is perhaps the surest indication for gathering Summer and Autumn varieties. Winter varieties should be left on the trees as long as practicable. Pears keep better in masses and ripen with a better flavor and higher color in a dark room, which should always be clean and free from any strong odor. Pears should always be gathered with the greatest care, as the slightest bruise will cause them to decay before maturing.

In regard to keeping Winter pears, Mr. Barry says, "that after many years experience he has found the most effective means of preserving Winter pears to be late gathering, packing away carefully only sound fruit in close barrels, leaving them in an open shed, only protected from rain and the direct rays of the sun, as long as the temperature is above the freezing point." The keeping quality of pears in California is very much affected by the soil and climate in which they are grown. Since the completion of the Pacific Railroad pear culture becomes of more importance perhaps than that of any other kind of fruit. But for those engaged in it the growing of the most perfect fruit will be the only means of making the Eastern markets available. The following varieties are cultivated more generally throughout the State than any others: Madeleine, Bloodgood, Beurre Clifford, Dearborn's Seedling, Clapp's Favorite, Bartlett, Seckle, Duchess D'Angouleme, Beurre Bosc, Beurre D'Anjou, Beurre Clargeau, Beurre Hardy, Doyenne du Courmica, White Doyenne, Louisa Beurre de Jersey, Onondaga (Swan's Orange), Stevens'

Genesee, Urbaniste, Beurre Easter, Beurre Geis D'Hiver, Noveau Columbia, Doyenne D'Alencon, Glout Morceau, Lawrence, Passe Colmar, Winter Nellis, and Vicar of Winkfield. The Doyenne D'Alencon keeps the best of any variety I have yet fruited. I have it in perfection now. I believe all varieties of pears can be made to grow to as great perfection in this locality as in any other part of the State, and I have no doubt there are many varieties that I have not mentioned equal or superior to any of those mentioned for general cultivation.

THE CHERRY.

The cherry is a fruit that is receiving especial attention in California and is being cultivated on a very extensive scale. Orchards are planted with thousands of trees each. The great perfection in which it grows and the abundant crops produced annually will make it a profitable fruit to cultivate, even if drying and canning should eventually be resorted to to consume the surplus crop. There are many of the Bigareau varieties, particularly the Napoleon, that I think can be shipped East successfully and profitably, which will make a market for a much greater quantity of this delicious fruit than if we were confined to the markets of California.

The cherry requires a dry soil. A sandy loam is the best, and particular care is necessary to protect the young trees from the hot sun after transplanting in this section of country. I believe the Mahaleb will be found to be a better stock than the Mazard on which to grow the cherry in many localities, especially in uplands. Nearly all varieties attain the greatest perfection here with good cultivation.

THE PLUM.

The plum should receive particular attention with fruit growers in California. The tree is hardy, grows on nearly all soils, and bears abundant crops all over the State, while in the Eastern States the crop is nearly destroyed by the "curculio" and "black gnat." Many varieties can be shipped as far as New York in perfect safety. I have shipped the Washington, Yellow Egg, Coe's Golden Drop, and Coe's Late Red that far without the slightest injury. For the different varieties of plums, particularly the prune varieties, dried, we have almost the whole world for a market, and no fruit can be dried with less trouble, or more profit, than the plum.

PEACHES.

The culture of peaches should not be neglected wherever they can be grown successfully. The cultivation of the peach, where it can be grown profitably, is limited perhaps to a smaller portion of the State than any other kind of fruit. A rich sandy soil is the very best for the peach. It can be grown throughout the Sacramento Valley, and in favored localities along the foothills, and in the mountains, to great perfection and profit, if within reach of our own markets. Great care should be taken to select varieties that are not troubled with the curled leaf, which seems to be the principal enemy of the peach in this country.

APRICOTS AND ALMONDS.

The apricot is also a profitable fruit to grow wherever the peach succeeds, if only for drying and preserving.

The almond is but recently receiving the attention it so justly deserves in this country, as one of the most profitable trees for fruit growers to cultivate. There are some varieties grown nearly all over the State, and I believe there is no crop more to be relied on for profit than the almond. California ought to supply the market of the United States. Mr. Taylor, near Marysville, has recently planted ten thousand trees for himself of the Languedoc variety. That is the best variety, all things considered, that I have seen yet.

THE GRAPE.

I shall not mention any other kind of fruit except grapes, which are of equal or greater interest to fruitgrowers in California than any other. In considering grapes as a profitable crop to cultivate, I will mention four purposes for which it is worth the especial attention of all fruitgrowers in the State, for it succeeds everywhere upon all kinds of lands for some one of the four purposes I shall mention, with perhaps less care and more certainty than any other kind of fruit. We are cultivating the grape for wine and brandy; we are cultivating it to supply our market with the choicest table varieties; also for raisins, and for shipment to Eastern markets. For all these purposes we must have varieties especially adapted. For wine and brandy I am not prepared to say which varieties are most desirable, although the common Mission has been cultivated and is used more extensively for those purposes than any other, but I do not believe wine men regard it as the most valuable variety. For raisins, I consider the White Muscat of Alexandria the best. It is a well known and most delicious grape, and is the variety that makes the fine Muscatel raisins imported from Spain. California ought to supply the market of the United States with raisins as well as almonds. Some of the finest varieties to cultivate for our home market are Black Hamburg, Black Morocco, Black Prince, Black Muscat of Alexandria, White Muscat of Alexandria, Cannon Hall Muscat, Royal Muscadine, and Reine de Nice. For varieties for shipping East there are very few that can be shipped successfully, as they are necessarily confined to firm-fleshed varieties. The Cannon Hall Muscat and Reine de Nice I think are the best that are cultivated to any extent as yet. The White Lisbon I regard as superior to either of these, having bunches large and loose, berries oval, skin greenish white, flesh firm and crackling, not very juicy, but with a sweet and refreshing flavor. It is this grape that is imported from Portugal in such large quantities to supply the Eastern markets. I have no doubt but it will succeed as well here as all other varieties that have been tested. There may be others that can be shipped in perfect order; but whatever fine varieties you can ship East in perfect order will find an almost unlimited market, with prices that will pay handsomely where they can be grown so easily as in California.

HOW TO MAKE FRUIT GROWING PAY.

BY A. S. GREENLAW.

How to make fruit raising pay might be more easily demonstrated in theory than by practice, as many have found to their cost. While theory takes an outline of what has been in some particular instances realized, and judging from what have been the requirements of the past what may be the future increased demands, arriving at conclusions highly satisfactory, practice comes with spade and plowshare, pruning-hook and saw; trees and vines are grown, fruits marketed, and perhaps a very different result is obtained. A common error is to cultivate wholly a few varieties that may bring the highest price in the market at the present time, neglecting equally good varieties that may be cheaper. The probabilities are more than even that by the time the trees and vines are in bearing condition the market will be overburdened, and those kinds which have been neglected bring highly remunerative prices. There is more money lost by trusting to a one-crop system of farming than, perhaps, from any other cause. The grain grower discovers the fact when his crop sells for six bits per hundred; or, if a man's dependence is on the raising of hops, and they, contrary to their nature, fall instead of rising to meet his expectations.

To make fruit raising a profitable business requires a man to enter the field from choice rather than necessity. Certain conditions too are to be observed, such as favorable and convenient markets (there being a greater profit in disposing of the fruit in a green state), a suitable soil, and a wise selection of the best varieties that will give a continuous supply throughout the season—only giving preference to those particular kinds that would ripen during the period of greatest demand. Hence I would raise more Winter apples than Summer and Fall varieties; I would raise more peaches that ripen in August and September than the earlier kinds, as the former are of better quality and more sought after for canning purposes. It is true, that if we are first in the field a very profitable result may be obtained by raising some new and earlier fruits; but the market is soon overstocked. You that have been long in the business will remember with me how much haste was made a few years ago in raising the early harvest and red Astrachan apples; also the Madeleine pear, that then brought prices ranging from thirty to thirty-five cents per pound. How soon the demand was more than supplied, and we found it very hard to dispose of all we raised. In eighteen hundred and sixty and sixty-one, peaches were worth about one cent per pound, and many were allowed to go to waste, as they would not pay the expense of marketing; and so discouraged did the growers become that they were slow to replant their orchards destroyed by the flood of eighteen hundred and sixty-two, for which cause good peaches have, since that time, been worth from three to ten cents per pound, while the second quality have sold readily at from two to three cents. I have

found by observation that the larger fruits, such as pears, apples, and quinces, will average, when carefully marketed, about two cents per pound. Among those engaged in the cherry culture, I have to hear of the first one who finds it unprofitable. I might speak as favorably of other kinds of fruits, such as plums, apricots, nectarines, etc. The different kinds of berries are as important in our local market as any other variety of fruit, as shown by reported sales in San Francisco.

BLACKBERRIES.

I cannot speak with certainty of the profits of these, with the exception of blackberries. There has been a very great difference in the price of this berry in the last few years, varying from twenty or twenty-five to eight cents per pound, the average price of last year—this last figure paying the producer well. From an acre of good vines six thousand four hundred pounds may be raised—they will oftener produce more than less. These, at eight cents per pound, would amount to five hundred and twelve dollars. I will introduce the debtor side of this account and find the net profit. Plowing and fitting the ground, six dollars; twelve hundred and forty roots, eighteen dollars and sixty cents; labor in planting, three dollars. Total, twenty-seven dollars and seventy cents. This is all that can be charged to the first year's account, as the further cultivation is chargeable to a crop of vegetables raised on the same ground. Second year: trimming vines, eight dollars; cultivating, nine dollars; rent of land, twenty dollars; picking and marketing at three cents per pound, one hundred and ninety-two dollars; expenses the first year, interest added, thirty dollars. Total, two hundred and fifty-nine dollars; leaving a net profit of two hundred and fifty-three dollars. I think this may be regarded as an average profit from the vines in future years.

LARGE FRUIT.

As regards the quantity of the larger fruits raised, one need but look upon any well cultivated tree when loaded with fruit, and in his mind multiply the number of pounds by eighty, the number of large trees to the acre, and this by two cents, the average price, and every one will see the profit in the investment. But one says: "All very fine; I have a lot of apple trees that bear the best of fruit, but I fail to see the two cents per pound." Says another: "I have good pears, but none come after them at any price." Another: "I was down town and inquired the price of peaches. They told me they had plenty." All these men say: "I don't see how this thing of raising fruit can pay." So they market none of their crop green, as the traders are well supplied; neither dried, as the labor of drying costs more than the fruit will bring. They do not even dry sufficient for their own use, although they have abundant leisure. Nor have they even a few pigs that might be fattened without trouble, and they (the pigs) might certainly be marketed; and if the account at the grocery be looked over and see the number of times bacon and lard are charged, one might infer that a goodly amount might find a home market. I have said nothing of the grape, but it will lose none of its merits if I pass it over to our able and worthy fellow member who is soon to give us an essay on this noble fruit and its uses.

During the years an orchard is coming into bearing, the ground may be planted with vegetables, which will pay all the expenses of cultivation. We should not forget to set out a small nursery of young trees,

that we may replace or enlarge our orchard as occasion requires. The expense is but little if any more than to purchase the trees. If you raise them yourselves, you will be sure to get the kind you desire. There is such a babel of names for fruits on this coast that the same variety of fruit may be known to the farmer and nurseryman by entirely different names, so that we are not always sure of getting the kinds we want. This one fact shows the great necessity of a standard work on California fruits.

THE MARKETS.

To realize the greatest price, be always in the market with a full supply of all seasonable kinds. Thus, every day, from the first of May till the first of December, we have a profitable trade for eight months in the year. Should some sell so low as to realize but little over the expense of marketing, or even be given away, it only sharpens the appetite, and we are fully compensated by having those kinds that bring the highest prices. By all means, be careful in selling that the purchaser may get just what he bargains for. Get your fruit into the hands of the consumer in the most direct way possible. Be ready to fill all orders with dispatch. Be obliging to your patrons; let them know that you consider what is for their interest to buy it is for yours to sell. Be sure you charge no more than the market price, as reputation has much to do in disposing of your commodities. Never allow your crop sold on commission, unless disposed of in the larger towns, where the demand is great, and only to those houses that make rapid sales, quick returns, and charge small percentage. There will necessarily be much that is unmarketable; we should take the most direct way of turning this into cash, by employing such help as work for their board, lodge themselves, and live on the fruit, making returns in good sweet bacon and lard.

GOOD TOOLS AND WORK.

Have good implements to work with, and keep them in good condition and in their proper places. Nothing is gained by spending time in looking after lost tools. Leave nothing for to-morrow that may be done to-day. Rise early, for the industrious find capabilities in the soil that the sluggard never dreamed of. Take the papers—an agricultural as well as a general newspaper. They are as much a necessity to one in this department of industry as in any other. I would not impose on you by consuming time to point out their utility, which must be self-evident to every thinking person. You show me a fruitgrower that does n't take a paper, and I will show you one that does n't make his business pay. It is a sufficient cause of failure, and he should subscribe for one at once. But however anxious we are that we may have cash to show for our year's operations, we must not forget to nourish well the goose that lays our golden eggs. Our trees must be well pruned and cultivated, and if any tree bring not forth good fruit it must be grafted with better or hewn down and cast into the fire. With the showing I have made, our markets continually being enlarged by an increasing population, with the facilities afforded by rapid transportation, opening up distant markets for many of our fruits, I think his vision must be obscure who cannot see in the future, as well as the present, bright prospects for those engaged in this pleasant avocation.

CULTURE OF THE SUGAR BEET.

BY WM. M. HAYNIE, OF SACRAMENTO.

In presenting a brief statement of facts in reference to the culture of the sugar beet, and its great value as a sugar and forage root, I cannot avail myself of much practical experience in connection with the subject; but, as I promised you, I will give you a statement of what I believe to be reliable facts, deduced from information obtained from practical sugar makers, and different reports upon the subject. It is no longer with us a problem whether California can raise the sugar beet with sufficient percentage of saccharine matter secreted within its cells to make the extraction and conversion of this principle into sugar a profitable and a grand financial success.

THE HISTORY OF BEET SUGAR.

The history of the culture of the beet for sugar is one of the most interesting and valuable pertaining to the industrial arts. Although it does not run back more than seventy-five years, its growth and developments have been so rapid that in many European countries the production of sugar from the beet is firmly established, and has become one of their most stable and valuable industries. In seventeen hundred and forty-seven, Margraff, a Prussian chemist, read before the Academy of Berlin his memoir on the existence of a sugar in the beet identical with that in the cane. It was not, however, until fourteen years after this that this discovery found its first application.

Achard, another chemist of Berlin, republished the discoveries of Margraff, and it is to his indefatigable industry and perseverance that we owe the first practical methods used in the manufacture of beet sugar. From seventeen hundred and eighty-nine to seventeen hundred and ninety-six Achard devoted himself to the culture of the beet and experimenting in sugar making at his farm at Caulsdroff, near Berlin, at the end of which time he founded at Kunern, in Silesia, with the assistance of Government, a manufactory which proved to be successful. This is the origin of the manufacture which is to-day represented by so many establishments through continental Europe. The great cost, however, of the sugar, from the crude and defective method of extracting the juice, defacation, and crystalization of the sugar, precluded this and two other establishments, which had been erected near Paris, from prosecuting the business, and very soon they were forced to suspend operations, and their failure threw great discredit on the industry. In eighteen hundred and ten the attention of the French Government was called to this subject, and some specimens of sugar were presented to the Emperor Napoleon. This sugar was the product of experiments made in France and induced by a report read before the Academy of Sciences by M. Deyeux. The price of cane sugar (about sixty cents per pound) in France at that

time and the feasibility of the manufacture of sugar from the beet having been established, the Emperor soon set himself at work to extricate his empire from the sweet dilemma in which he found it placed through his aggressive warfares. Consequently, on the twenty-fifth of March, eighteen hundred and eleven, he ordered that thirty-two thousand hectares of land should be devoted to the culture of the sugar beet, and one million francs were placed at the disposal of the Minister of the Interior for encouraging this industry, and under date of January fifteenth, eighteen hundred and twelve, he issued a new decree establishing five Schools of Chemistry, where the processes used in this manufacture should be taught. This act of the great Emperor was one of the crowning acts of his life and was characteristic of the man—quick to perceive the situation and prompt to act in such a decided and positive manner that all obstacles that had hitherto prevented the successful prosecution of this great industry vanished like the wind, and the historian will do well to remember that this man of genius is well entitled to the honor of being the first permanent founder of this great agricultural industry. We find also from the crop of eighteen hundred and twelve there were two million kilogrammes or nearly four million pounds of raw sugar produced in the four imperial factories. The political crisis, however, of eighteen hundred and fourteen was a terrible blow to this new industry, and caused the temporary suspension of all the manufacturers but one. Government again came to the assistance of the industry and it revived, since which time it has made rapid strides—doubling in France every ten years since eighteen hundred and forty. In eighteen hundred and sixty-five the average annual consumption for each person was fourteen pounds, the beet sugar manufacturers supplying sufficient for that amount.

AMOUNT PRODUCED.

The total amount of sugar produced from the beet on the continent during the year eighteen hundred and sixty-nine, was over six hundred and eleven thousand tons, from eighteen hundred manufactories. Of this amount France produced three hundred thousand tons, which, at six and a quarter cents per pound, amounted to thirty-seven million five hundred thousand dollars. It is further estimated that the molasses available for distillation of spirits is valued at two million five hundred thousand dollars, making the saccharine product of the country forty million dollars. The cultivation of the sugar beet and manufacture of sugar therefrom in our own country has not made that rapid progress which we could wish; but after a series of preliminary disappointments and failures, such as embarrass almost every new and valuable industry, the economic difficulties of the beet sugar culture seem to have been measurably overcome. Much still remains to be done; but from the results already obtained, capital finds fair inducements for more extended investment, and more especially so in our own State, whose soil and climate are unsurpassed for the growth of the sugar beet and the high per centage of saccharine matter contained in them.

IMPORTANCE OF THE INDUSTRY.

It has been well said that the rapid growth and development of this industry throughout Europe forms one of the most interesting spectacles of the present century; and the economic, social, and industrial questions to which it has given rise have attracted the attention and

utilized the labors of the leading minds of the countries in which it has been established. The beet has found its supporters and adherents in the cabinets of kings, the academies of science, in agricultural societies and farmers' clubs, in the machine shop, and in the peasant's cottage. No other industry of modern times has so successfully harmonized the agricultural and manufacturing interests, which have heretofore been regarded as inimical to each other; or has originated and supported so many subservient and minor interests. With these patent facts presented to us, so fully demonstrating the vast agricultural and manufacturing wealth now slumbering in the cradle of the earth upon which we stand, it needs no prophetic mind to foresee the great social, financial, and industrial wealth that awaits us in the immediate future. The value of the success of this industry in our country may be partly estimated from our enormous importations of foreign sugar. During the fiscal year ending June thirtieth, eighteen hundred and seventy, we imported eleven hundred and sixty million four hundred and sixty thousand one hundred and fourteen pounds of brown sugar, one hundred and fifty-one thousand five hundred and twenty pounds of refined sugar, thirty-six million one hundred and sixty-one thousand nine hundred and thirty-five pounds of melado and syrup of sugar cane, fifty-five thousand eight hundred and twenty pounds of candy and confectionery, and fifty-six million three hundred and seventy-three thousand five hundred and thirty-seven gallons of molasses. The total declared value of these imports was sixty-nine million eight hundred and twenty-seven thousand eight hundred and eighty-four dollars. Our domestic sugar cane, beet, maple, and sorghum did not amount to one eighth of this aggregate. During the year following, the aggregate value of sugar, syrups, etc., imported, reached seventy million eight hundred and two thousand three hundred and ninety-eight dollars and sixty-nine cents, paying duty to the amount of thirty-two million five hundred and eighty-five thousand one hundred and twenty dollars and sixteen cents. These facts should stimulate us to positive and decided action, so far, at least, as to stop the money drain from our own State caused by the importation of sugar, syrups, confectionery, etc.

VARIETIES OF THE SUGAR BEET.

The white Silesian—a white beet root with a green collar—is the one in general cultivation throughout the world for sugar making. There are four distinguishing characteristics that apply to the beet most perfect for the secretion of saccharine matter:

First—Its root must be shaped nearly like a Bartlett pear, and devoid of large lateral roots.

Second—It must not grow above the surface of the soil.

Third—It must have a smooth, white surface, and the flesh be white and firm.

Fourth—Its size must not be too large, and its weight not exceeding three to six pounds.

The white Silesian unites most of these qualities. The foliage is not upright, but broad—spreading and lying flat upon the surface of the ground. Beets possessing this peculiarity grow entirely beneath the surface, and readily secrete the greatest amount of saccharine matter during their growth and ripening.

THE PROPER SOIL.

All land to be used for the growing of the beet for sugar making—whether it be a sandy loom, calcareous, argillaceous, or of any other character—must be free from saline and alkaline constituents. The beet root is a great absorbent of these constituents, and if planted in soils having these salts preponderating to any great extent, will always secrete these salts, to the great prejudice of the saccharine or sugar making quality of the root. The beet will thrive and grow well upon these alkaline soils, and, if grown for stock feed, will produce more pounds to the acre than if grown on sweet land. It has been fully demonstrated that this variety of beet, whether grown for sugar or stock feed, is far above any other variety in value. The growing of the beet upon these saline and alkaline soils is the most perfect and cheapest method of reclaiming them from these destructive mineral salts. The rankest alkaline lands, after being cropped three successive years with the beet, will become kind and sweet, and will thenceforth produce heavy crops of wheat, barley, and corn, and is also well adapted for orchard planting, and whoever has this character of land to cultivate can make it profitable to raise beets for stock feed, and at the same time reclaim his land for any other agricultural pursuit. A deep, rich, sand-alluvial soil, with an open porous subsoil, is the very best land to produce the most favorable results in the cultivation of the sugar beet, both as to quantity and quality. Other soils, however, are well adapted to the culture of the root. Clay and sand, at the same time somewhat calcareous, deeply plowed, and finely pulverized, will give good results. Argillaceous soil, heavy and stiff, must be improved by draining, in order to fit it for the cultivation of the beet. The root, however, on these soils is liable to suffer from drought and wet.

PLANTING AND CULTIVATION.

There are two ways for planting the seed—in drills and in hills. In Europe the latter method has been practiced of late years. In preparing the land for either method, it should be plowed deep during the Winter—at least twelve inches. California has a vast advantage over Northern Europe and the Atlantic States in this department of the industry. There they are compelled to wait patiently for the Spring thaw; here we can commence as soon as sufficient rain has fallen to mellow the ground, and we can have our beets all planted before they have got cleverly to work. All stiff calcareous and argillaceous soils should be cross-plowed and thoroughly pulverized before planting. If the planting is to be in drills, lay off the drills about thirty inches apart. If the planting is not to be very extensive, it can be done with a common marker, with four to six teeth set thirty inches apart, and the seed dropped very fast by hand through a long trumpet-shaped tube, large at the mouth and small at the lower end, the planter walking alongside of the drill and holding the lower end of the tube in the drill while dropping the seed in at the mouth. If large fields are to be planted, it will pay to get a large drill machine, worked by horse-power. The planting with us should begin, if on upland valleys, about the middle of January; if on the low bottom lands, the middle of February is early enough. The cultivation should be thoroughly done, both by horse and hand-power. If the planting is to be in hills, the hill may be formed by

using a small double plow, running furrows at equal distances apart one way, then crossing at right angles, so as to have the hills about twenty-four inches apart. This method facilitates more rapid and thorough cultivation, and is fast superseding the older methods in Europe, as more abundant crops can in this way be produced. In either method, it is imperative that the crops be very carefully weeded and cultivated. The amount of seed required to plant an acre will be about fifteen pounds. After the roots begin to form of considerable size they should be carefully hilled up by drawing the earth over the crowns as effectively as possible without covering the foliage. This is necessary to prevent too rapid and unnecessary formation of woody fiber, which detracts very much from the value of the root for sugar purposes. The crop will be ready to dig about the last of September on bottom land, and I think if grown in our large valley districts where, I believe, by the aid of irrigation and long planting, we have thousands and thousands of acres of the finest sugar beet land, it could be gathered, or sugar-making could commence, as early as the first of July—the beet roots being well and sound, after being dug, until about the first of April, when the sap begins to start, then they lose their sugar properties very fast.

THE PRODUCT OF SUGAR.

I have been informed by a scientific beet sugar maker that he has extracted from beets grown near Sacramento fifteen per cent of saccharine matter. The working average in the factory is fully eight per cent, if not more.

THE MANUFACTURE.

We will now make a rough calculation upon this basis. The same gentleman informed me that five dollars per ton would pay all expenses for manufacturing the beet into sugar. Now, we will allow five dollars per ton for the cost of the beet, and one hundred and fifty thousand dollars for the erection of the manufactory, capable of converting fifty tons of beets daily into sugar, and two hundred working days for the year; the accounts will stand thus: Interest on one hundred and fifty thousand dollars, at ten per cent, fifteen thousand dollars; cost of ten thousand tons of beets, at five dollars per ton, fifty thousand dollars; cost of working up same, fifty thousand dollars; total cost, one hundred and fifteen thousand dollars. Sugar produced from ten thousand tons, at eight per cent, one million six hundred thousand pounds, valued at twelve and a half cents per pound, two hundred thousand dollars; deduct one hundred and fifteen thousand dollars; leaving a clear profit of eighty-five thousand dollars.

This calculation, I am fully satisfied, does not overrate the profits in this grand industry, when parties avail themselves of all the modern improvements of the age as to manufacture and production of the sugar. As to the beets of California producing as much or more sugar than any other part of the world, we have only to consider the advantages of soil and climate. In Europe very often the beet root is injured by continual wet and humid atmosphere. The solar rays are obscured, and the root will secrete a much larger per cent of water, pectine, albumen, etc. Again, the crop is more liable to suffer from drought. In fact, the climate casualties there and in the Atlantic States are at least fifty per cent greater than here; and I am fully convinced that in a few years, if the necessary reforms shall be brought about by our law-

makers for the encouragement of this, as well as many other industries now only awaiting such action, that we shall see this, the sugar interest of this State, grow to immense proportions.

REFORMS.

The first reform that I shall mention is a radical change in the programme laid down for the conducting of our Agricultural College. Let there be established immediately a branch of Agricultural Chemistry, where the different processes used in this manufacture shall be taught, that our own sons may be taught the science. Second, let the Legislature repeal the Specific Contract Act, that money may become cheaper. Third, let them also pass a No-fence Law, to induce immigration to our State.

FREIGHTS AND FARES.

Fourth, regulate freight and passenger tariff by rail in this State—especially the local roads—not, however, in a spirit of factious opposition on general principles to the railroad interest. The reform, to my mind, is necessary and paramount to all others mentioned, before we can hope to see the great agricultural wealth of the State developed. Let the people, then, give to the railroad interest every encouragement and reasonable accommodation, both in land and money subsidy. This has been done. Fifteen cents per mile per ton of freight, and ten cents per mile fare, is simply a prohibition of freight and travel, and at the same time, to the intelligent man who would willingly settle upon land in the interior of the State, is a complete bar. No intelligent man will put himself and the labor of his head and hands, and the wife and little ones of his household, in a position to be legally starved to death. No, no! He must know what contingencies he must provide for before he will thus settle.

But it has been said that the company never exact those rates. Then, if this be the fact, which I do not admit, we, as a people, are mere lick-spittles for the great monopoly to allow this law to stand, a perpetual and constant menace, to be used by them to intimidate the public, and especially the farmers, forcing them to be very circumspect how they express their opinions upon railroad matters. I think that the gentlemen composing this great company ought to be satisfied to receive and own the millions that have been given them—and which we are willing they should have—and not to ask the people to allow them to collect revenues that will pay them interest on these vast gifts. They ought not and should not be allowed so to do.

I have no doubt that any community or place adapted to the growth of sugar beets, that will offer a subsidy of two hundred thousand dollars in bonds and lands, will find any number of competent gentlemen who will give bonds to erect a manufactory, grow the beet, make the sugar, sell it at reasonable price, pay their taxes, and not ask the people to pay them interest on the two hundred thousand dollar subsidy.

RAISIN CULTURE IN CALIFORNIA.

BY I. N. HOAG.

There is a strip of country, say about twenty miles wide, on the western slope of the Sierras, and extending from Butte County to the southern extremity of the State, that may be set down as generally well adapted to the growth of the raisin grape and to the drying or curing of the fruit. Along the western slope of the Coast Range, stretching through the State from the same points north and south, but narrower in extent, is another strip equally as well adapted to the same business, with the exception of some points where the winds and fogs from the ocean sweep through a depression or cañon. In designating this strip by towns, we would name Folsom as about the lower or western boundary and Coloma as about the higher or eastern boundary.

This strip or belt of country produces a richer and drier grape and a grape of a better pulp than is produced higher up the mountains or lower down towards or in the valleys. The reason is that the atmosphere in this belt is more even, as between day and night, than that of a greater or less altitude. When you get above Coloma the dews continue later in the Spring and commence earlier in the Fall, and are more abundant. The same is true as to rain. When you come into the valley or brow about the altitude of Folsom, you are more or less within the influence of the sea breeze; the atmosphere is damper even in the daytime, and more so in the night. The south winds that sweep up the valleys in the afternoons come more or less charged with humidity from the sea, and as the sun goes down this humidity is precipitated to the earth as dew. Grapes are affected by the condition of the atmosphere in which they are grown, and hence it is easy to see why grapes grown either above or below the belt of country named would contain more water, and less pulp and saccharine matter, than those grown within that belt.

CURING GRAPES.

The facts which we have named above, as indicative of the best location for growing raisin grapes, point with equal force to the same locality as the best for drying or curing them.

A dry atmosphere, both day and night, and a uniform heat, as near as may be, are the circumstances or conditions favorable to curing grapes. In the belt of country we have indicated there is no dew of any account from July to October to dampen or check drying fruit, and except for the purpose of retaining a greater degree of heat during the night, a cover at any time would be unnecessary. In the latter part of Summer the surface of the earth in this part of the State becomes quite warm, and the atmosphere, close to or on the earth, retains that heat at a greater degree during the night than at a greater elevation; hence, in drying fruit of any kind, the nearer the ground they are placed the

more rapidly they will dry, and particularly in the case of raisins, the better and higher flavored they will be. In the European raisin-producing countries they make a sort of adobe floor on the ground, looking to the south, with adobe partitions running north and south, say a foot high, and headwalls at the upper and lower ends. Upon this floor the bunches of grapes are laid, and a canvas or cloth awning is arranged, with a roller like an awning, to roll up in the daytime and down in the night. This awning is there necessary to keep off the dews, and answer, at the same time, to keep in the heat that accumulates during the day. For the former purpose it would not be necessary here; but for the latter, while it would not be a necessity, yet it would add very much to the rapidity and perfection of the work, and the expense would be but trifling.

While the grapes are thus exposed to the action of the sun, they are turned over in the bunch each day, and as soon as any bunches are sufficiently dried, they are removed from the drying place and packed in boxes for the market. This latter practice becomes necessary to prevent any from becoming too dry. Like figs, raisins are ruined or very much injured by being overdried, and like figs, they go through a mellowing process after being packed; and to secure the perfection of this last process, they must be packed in just the right condition. To be able to judge of this condition, some experience and skill is necessary, but this skill is soon acquired by experiment and observation.

Some people have an idea that it is necessary to dip the grapes in a lye or other composition before putting them to dry; but this is a mistake. They should be picked from the vines when very ripe, and placed immediately in the hot sun, to cure in the natural state. They require the influence of the sun to give them the proper raisin color, as the best raisin grapes are of the white or green varieties.

VARIETIES OF GRAPES FOR RAISIN MAKING.

There are a number of kinds of grapes used for raisin making. In this State, the Malaga, Muscatel, the white Muscat of Alexandria, the White Malaga, the Fahir Zagos, the Flame Tokay, and various other kinds, have been used experimentally; but the three first named have been found the best, and their excellence is in the order in which they are named. The two first named are richer and higher flavored than the white Malaga, and make a higher-flavored raisin, while the first named is superior to the second, from the fact that its skin is a little more delicate or tender, and it is a little earlier in ripening, thus allowing the work of curing to commence sooner in the season.

PROFITS OF RAISIN CULTURE.

We have no data or figures by which we can give the financial results of any experiments in this business in this State; but we would say that in a country where the vine produces so certainly and so abundantly as here, where there has never yet appeared any insect or other enemy to endanger to any extent the crop, and where the climate is so favorable for securing in the fruit the requisite properties for curing it so economically, and where there can be no competition for supplying the ever present and extensive demand, except at so great a distance from us, it

seems to us that raisin culture, properly conducted, can be made one of the most remunerative of industries. In confirmation of this view, Mr. B. N. Bugbey, who has made and sold more California raisins than any other man, and than perhaps all others in the State, says, in a late statement to the State Board of Agriculture, that he is so well satisfied on this point of profit, that if his wine and brandy did not employ all his capital and time, he would at once enter upon the culture and manufacture of raisins upon a large scale. There are a plenty of cuttings of the best varieties in the State. Among those who, we know, have them, we may name Mr. Bugbey, J. R. Nickeson, Robert Chalmers, and many others.

BLIND DITCHES.

There are a very few farms, even in this State, that would not be greatly improved by a proper system of drainage. Every sinkhole where the water settles and stands until taken up by evaporation would be greatly improved if it could be drained. Many of these low places have become what we call "alkali spots." The soil has become compact and clammy, and hence dead and unproductive. It wants something to enliven it up and reclaim it. Such spots generally possess a greater amount of the fertilizing elements than any other land about them. These elements have been collected there by the water, but at the same time the water has concentrated too much of other ingredients, and thus rendered the fertilizing qualities dormant.

The blind ditch is the most effectual way to accomplish both these objects. Where stone is plenty they are generally used to make these ditches—sometimes tiles and lumber. In this country, especially in the great agricultural districts, stones are scarce and lumber and tiles are too expensive.

A very good substitute for these materials is common oak brush, or any other kind of brush that will lay up light and last well under ground. Let the ditch be dug to the proper depth and of the proper size, then throw in the brush and settle it down well. Then cover with straw or weeds to prevent the dirt from falling into the crevices too much. This being done, cover over with dirt.

We have seen ditches made in this way answer equally as well and fully as effective as those made with stone. Being entirely under ground, the brush will not decay to do any harm for many years.

ALFALFA.

BY I. N. HOAG.

TIME OF SOWING.

There is much difference of opinion among those who have had experience in cultivating this grass as to whether the seed should be sown in the Fall or Spring. Our experience, and we have had considerable, besides an extensive observation, is that if the Fall is favorable—that is, if we have early Fall rains followed by warm growing weather, it is much better to sow in the Fall. If, however, the rains hold off late, and the weather is cold and frosty, like the present season, then it is better to wait until a favorable time in the Spring. The reasons are very plain, and are these: If the rains are early and followed by warm weather, the young clover will get a sufficient start and the roots will penetrate the earth to a sufficient depth to withstand any cold and frosty weather that will be likely to follow, and the clover will grow all Winter, or through the rainy season, and be sufficiently forward to mow the first time in May, or the very first of June. Under these circumstances, all things being favorable, three crops of hay may be taken from the land the first year; or, what is generally better, two crops of hay and one of clover seed. By allowing the last crop to mature it may be cut for seed and thrashed with a machine like wheat or barley, and the straw and chaff will still make good fodder for cows or sheep. Under circumstances as indicated above, it will be better to sow the seed alone, as by so doing the land will be better economized than if wheat or barley were sown with it.

If, on the contrary, the rains hold off till late and the weather be cold, the small clover, if sown in the Fall—if it start up at all—will be most sure to be killed out by the frost, and the seed and use of the land for that purpose will be lost; but should any one conclude to sow his clover seed in the Fall, notwithstanding the unfavorable weather, then it will be safe to sow wheat or barley with it. First, because if the clover does not come up, he will still make a crop of grain; and second, that if the clover seed does start then the growing grain will cover and protect it while small, and will thus be a benefit to it.

SPRING SOWING.

If the seed is to be sown in the Spring, then it should be sown early—just as soon as the danger from frost is past—so that the roots will penetrate the ground sufficiently deep to withstand the blasting north wind and dry hot sun. There was but very little Chile clover sown last Fall or Spring that was successful, for the reason that although much of it came up well and promised a success, we had an early dry and hot norther, followed by continued hot and dry weather, which effectually

dried it up and killed it. We had fifteen acres that came up as well as we ever saw any, and had got three leaves on it, and then was ruined in this way.

We believe that for Spring-sown alfalfa, it is generally better to sow a light crop of wheat or barley with it to protect it from these winds and drying hot sun.

PREPARING THE GROUND.

Whatever be the nature of the soil, it should be plowed deep and well pulverized and rolled level before the seed is put on. Then if you can take time and sow it just before a good rain, the seed need not be dragged or cultivated in, as the rain will do this part of the work sufficiently. But generally it will be safer after sowing to run the roller over the land the second time, or drag a light brush over it.

QUANTITY TO THE ACRE.

Twenty pounds to the acre is generally considered sufficient, but as this kind of grass is better for hay if grown thick on the ground so as to make the stems small, we would recommend to put on about twenty-five pounds.

Following we give extracts from a letter written by Nicholas Wyckoff, of Yolo County, one of the earliest, most extensive, and successful cultivators of this valuable grass in the State:

"It is well to fallow the ground when possible, and having the ground in fine tilth it may be sown before the rains in the Fall with good success, if the rain is abundant and warm, and then followed by a second rain to prevent its drying before taking root. There is poor promise here of succeeding in that way this season, as it is getting so late without rain that when it comes it may be too cold to germinate well. The best time here has proven to be in February, when the cold weather is usually over and the ground is becoming warm; it starts then and grows rapidly. Although it grows best in a warm soil and warm weather, it stands quite a measure of frost even in a young stage.

"Plow deep and thorough, let it remain, say, until the last of January, then put the ground in fine tilth, sow from fifteen to twenty pounds to the acre and brush or roll after sowing, but do not harrow, as it places the seed too deep. It germinates on or near the surface. Do not sow anything with it; it has been tried repeatedly in this county; it is but an injury. It is a benefit to graze it moderately, as soon as the growth is sufficient and the rains are over. Horses and mules will, if stinted, paw after the root, and hogs will entirely destroy it. Cows are the best stock to graze it the first year.

"It yields from six to eleven tons per acre per annum. I cut mine this year three times. It is not equal to wild oats for hay, but with free use with grain it is sufficient. For milch cows it is superior to any other hay; it excites the secretions. To make good hay it should have been in bloom at least ten days before cutting.

"When it is grazed by cattle and sheep it sometimes gives them the 'hooven,' sometimes called the colic. They swell up quickly and burst within, and death ensues. Cattle are only liable to it when the alfalfa is making a rapid growth in the Spring, and they fill themselves quickly. When it is grazed closely it does not occur. It should receive attention and be cultivated everywhere throughout California, where a suitable

soil may be found. Generally a good soil for wheat is a good soil for alfalfa. All alluvials are good; also muddy loams; dry, fertile lands that may be irrigated are still better."

We can see no reason why alfalfa should not do as well in any part of Oregon as in California. It is a native of Switzerland, and does well in our Sierra Nevada mountains as high up as Placerville, also in the State of Nevada and Utah Territory. There is no doubt that it is the most valuable grass for California that has ever been introduced. It is the only grass that will grow through our dry Summers and produce constant green feed without irrigation. We are assured by those who have pastured sheep on it, that one acre of good land well seeded to alfalfa, will keep forty sheep in good condition the year round; that sheep kept on this grass produce a better quality of wool than those which are pastured on the native grasses; the staple of the former being uniform and of vigorous growth, while that of the latter has weak places in it, in consequence of a check in its growth corresponding with the check in the growth of the grass during the dry season. We are glad to learn that many of our sheep men are preparing to seed portions of their ranges this season with alfalfa.

ALKALI SOILS.

BY E. F. AIKEN, OF SACRAMENTO.

The matter under discussion is still an open question, and it will require something beside mere theory to bring about a satisfactory result, to my mind.

I have not the presumption to say that a few croppings of a particular kind of vegetable known to have a peculiar affinity for the alkaloids in these soils will reclaim them and bring them into such a state that they will readily grow and mature any crop the cultivator may feel disposed to raise. The best method for reclaiming these soils is yet to be learned by experience, and it will require science—science combined with agriculture in its true sense—to bring about the desired result.

When we speak of uniting science with agriculture, we have reference to science in its broadest sense. A science, technically speaking, is a particular branch of human knowledge which has been systematized, its principles and rules defined, its department circumscribed, and arbitrarily established. In this respect chemistry and physiology are sciences; but the science we wish to bring into action to accomplish the end in view is that science which is the observation of nature, the accumulation of facts and figures, and the inferences to be deducted from them for practical application and use. Positive knowledge is what we want; belief in theory is not knowledge. What we learn by practice and experiment are facts.

Nature does her work by fixed laws; she is not a confused mass of matter and things, ever changeable, doing one thing to-day and to-morrow the reverse. All the minute and different parts of nature in their relations with each other are mutual and exact. There is a reason for everything, and a fixed rule by which everything mysterious is controlled and directed. There are many things concerning the laws of nature beyond our comprehension. There is nothing which should be beyond our inquiry.

There is a mysterious and wonderful power always at work in the vegetable world, from the germination of the seed we plant through the progress and development of its vegetable life. The relation of the different soils to the plants produced, the peculiar effects of heat, light and air, rains and droughts, their uses and results, are all more or less mysteries to us; yet from observation of those works of nature which are every day revealed to us, we can have no doubt that all these mysteries rest upon established principles and fixed laws. The finding out by investigation and practical experiment any of those so-called laws is positive knowledge, and, properly speaking, science.

This is the science that must be brought into combination with a thorough working and cultivation of these soils before they will be reclaimed. This is a subject that essentially concerns the people of California, as in all parts of the State, especially in our valleys near streams

and watercourses, there are extensive tracts of these soils that in their natural state produce nothing valuable, which might be made eminently productive, as advantageously to the health of the people living in the immediate vicinity as to the pecuniary profit of the owners of such lands. We will admit that these soils have in their composition all the elements necessary for the growth of the fine grasses, vegetables, and cereal grains, and if the nature of the soil was the only circumstance to be taken into consideration, the whole subject would be greatly simplified and easy of solution; but the aspect and elevation of the land are quite as much concerned in every question connected with the subject. The character of the soil in its native state is such that it not only retains the water stagnant upon its surface, but it is impervious to the roots of plants, especially of those plants which send their roots downward in search of nourishment; it is likewise extremely difficult to work in wet weather, being sunburnt and hard, and when turned up with the plow, remaining in large and unmanageable clods.

The first step in the progress of reclamation should be drainage by ditches. A good rule would be to make the drains of sufficient depth to take away all the water completely as low as three feet. It is impossible to lay down rules applicable to all places, or the distances the drains should be made from each other, so much must depend upon the quantity of water to be removed during the rainy season and the descent or fall to carry it off. These are matters left to the intelligent cultivator, consequent upon circumstances.

Without drainage, these soils can rarely be plowed and worked properly as early as they ought. An excess of water in the soil renders it very difficult and often impossible to work, prevents the access of the air, and reduces the temperature of the soil. Under-draining may well be called a shorthand way of virtually subsoiling, or plowing the ground three feet deep instead of ten inches or less; for by reducing the general water level in the soil, especially if inclined to be wet, it increases its power both of attraction and absorption, such as very deep plowing would do. There is no branch of agricultural industry that will do so much towards a solution of this question, and I am satisfied the result will be in the highest degree valuable and important.

The question whether the drainage and reclamation of these soils will pay involves a variety of considerations, and some of a strictly local character, and which must be considered by those who propose to undertake it. There are considerations connected with this subject which are not to be measured by a pecuniary standard—I mean, for example, such as refer to the health of the locality. The miasma and dampness arising from these soils in their natural state are a prolific source of ill health and sickness, such as fever and ague, and consumption. The cost of reclamation may in some instances be more than the land is worth after being reclaimed, or it may be quite equal to its value; but if it be worth nothing in its original condition the operation may be considered as an actual purchase of the land. The useful employment of one's capital and labor, together with the real satisfaction which one finds in having accomplished a good work, may operate as a strong inducement to such an undertaking.

The next move toward reclaiming these lands is deep plowing and thorough and careful cultivation, with the free use of the best fertilizers that can be procured. In other words, to keep the soil in the best possible condition for the absorption of heat, moisture, gases, and fluids indispensable to vegetable life from the sun and atmosphere above, and

for the free attraction of all their earthy constituents from the depths of the soil below. We can safely say that no soil can be made too fine for any crop within a given depth. The finer the better. In general cultivation it is left too coarse for all crops. Finally, and by no means the least important, a systematic cropping of such vegetables as are known to readily absorb and retain in their composition an excess of the alkaloids.

And now, gentlemen, it is immaterial to me whether I or any one else can scientifically demonstrate what I have said to you; yet I believe these principles to be substantially true, and I am satisfied that all who go to work and faithfully carry out these principles cannot be led astray in the practical result.

THE CULTURE OF SMALL FRUIT.

BY. E. F. AIKEN.

This is a subject that is comparatively new to all of us, although rapid strides have been made within the past ten years in the propagation and dissemination of new and valuable sorts of all the small fruits. There is a great difference of opinion among growers of these fruits concerning the best mode of propagation, cultivation, and pruning, and the adaptation of the different sorts to the various soils and locations; and it may be truly said, we have hardly begun to cultivate them understandingly. We have only to look back to a period within our own memory to ascertain about all that has been done in the artificial improvement of the small fruits. Question any of our fruit growers concerning the fruits to be found on our market-stands thirty years ago, and they will tell us that the fine sorts of cultivated berries to be found so plentiful during their season, nowadays, were then unknown. There were no Jucunda, Trionphe De Gand and Wilson strawberries, no Wilson's Early or Kittatting blackberries, no Clarke, Davidson, Thornless, and Mammoth Cluster raspberries, and numerous other sorts as valuable, that might be mentioned, which have been brought from a wild state to their present condition of excellence by hybridizing and other modes of propagation known to our skillful horticulturists. Our markets, in those days, were wholly supplied with such small fruits as the woods and uncultivated fields could produce; nature, without the assistance of man, supplied them in such quantity and quality as to satisfy the demand for the then uncultivated tastes of the people. The supply was limited, the demand was light. I will venture to say there is not one of us but that in recalling the pleasant associations of our boyhood days, can recall none more vividly than the holiday excursions after strawberries, raspberries, and blackberries, regardless of the two or three miles tramp through the sweltering sun, rambling over the fields, gathering, perhaps, from two to four quarts after a hard day's work, including innumerable scratches and falls. What a change has been in these fruits since those days. The increase of population has been such that such a source of supply was not equal to the demand. Hence came the necessity for our horticulturists to make use of their science, and assist nature to unfold some of her most useful and valuable fruits, which had remained hidden until touched by their skillful hand.

Through the scientific management of our horticulturists, we have now many new and better varieties of all our small fruits in general cultivation, while under the same skillful management more are being added to the list every year. Originators of these new sorts are stimulated to great exertion by their knowledge of what has been accomplished, knowing, too, that if successful in bringing out a new variety of great merit, they will be well rewarded for their labors.

The market stands of our cities are now loaded with the choicest sorts

of all these fruits in their season, and yet the price in most of our markets is as high, or higher, than years ago. This may, in a measure, be accounted for by the cultivated taste and increased demand, which has far outstripped the increase of population.

We are aware that there is a general desire for information on the subject of growing small fruits. Many of our small farmers and others are turning their attention to it as a business, and many families who have a few rods of land in cultivation, could, by using some discrimination in planting the proper kinds to keep up a rotation, have their tables supplied from April to November with the most healthy and desirable fruits.

The facilities for procuring plants of all the new sorts of our nurserymen, and from abroad through the mails (which charge only half a cent per ounce, and allow packages of four pounds weight to be carried), though not as yet half appreciated, has stimulated many to great exertion in small fruit growing; and many acres are now planted where but a few years ago there were none. With a constantly increasing demand many more will turn their attention to growing these fruits. The business is not now considered an experiment, but an established and successful occupation; and like growing the larger fruits, if prosecuted with energy, skill, and economy, will return corresponding profits.

The skill necessary to grow these fruits successfully and with profit must be learned by experience, as well as other things. The main object of most persons who cultivate them for market is profit, and to secure the greatest return for the capital invested, several points must be carefully considered.

First, and one of the most important, is the location of your grounds. Procure your site as near the city and your market as possible. Land within a mile of town is cheaper at two hundred dollars per acre for this business, than the same quality of land three miles away at one hundred dollars per acre. If you will calculate the difference in interest on the cost of the land first mentioned, and compare it with the many disadvantages you will labor under in being far from market, inconvenience of procuring help at a critical time, wear and tear of teams, etc., you will readily perceive the importance of a good location.

Next, use careful discrimination in selecting the kinds of fruit that succeed best in your locality, and such as will keep up a rotation throughout their season. Visit the grounds of your neighbors who are successful fruit growers; have your wits about you and your eyes open; ask questions about everything new to you, and you will get more practical information in an hour or two spent for the purpose, than you can get by reading all the essays ever written upon the subject.

It was not my intention to enter into a description in detail of how to grow small fruits. The subject, thus treated, would fill a volume, and necessarily create an elaborate discussion of particular theories relative to the different plants, locations, soils, and fertilizers for the different sorts, etc., and cannot be contained in a short essay. I shall, therefore, confine my remarks in this connection, to a few of the leading and most valuable sorts of raspberries and blackberries which I have under cultivation on my ground, and of these can speak from experience, leaving other varieties of fruits for members to discuss who can speak of them from the same standpoint.

The raspberry is one of the most delicious berries we have, coming, as it does, directly after the strawberry; in fact, the earlier sorts of this

indispensable fruit ripen with the late sorts of the strawberry, and we find them on the stands in the market together rivals for public favor, thus keeping up the succession of the early fruits. Within a few years several new and excellent varieties have been added to the rest, which has lengthened the season for raspberries materially.

PROPAGATION.

The raspberry is propagated, according to the habits of the different sorts, by suckers, by roots and root cuttings, by layers and by tips. Most of the varieties under cultivation are readily propagated by suckers from the roots. The manner in which I generally propagate the varieties that sucker readily, is to dig up the roots in the Fall—after the plants become dormant—and with pruning-shears cut them into pieces two inches long. These pieces are planted in ground carefully prepared for the purpose, in drills fifteen inches apart, and two inches apart in the drill, covering about three inches deep. If properly managed they will grow as readily as so many peas, and by the following Fall will have made fine plants for setting, if they receive the care generally given to a crop of beets.

There is one species, however, which, as a rule, does not multiply readily in this manner—I refer to the Black raspberry or Black Caps. This variety is generally increased by the tips, or ends of the canes, bending over and taking root in the ground—the end of a single cane with its branches often making a dozen plants. In our warm and dry climate they require more assistance by covering the tips with soil and watering, than they do in the East.

PLANTS.

The canes of all the varieties of this class of fruit are only biennial. The fruit is borne on wood of the previous year's growth, which dies in the Fall and is replaced by new wood for fruit the following year. One year old plants are always to be preferred for planting; plants grown from root cuttings, as before described, if well grown, I consider the best, because furnished with a larger number of fibrous roots. Those sorts grown from the tips of the canes, (the Cap family,) it is of more importance to select one year old plants for setting, as older plants are more likely to fail with the best of care.

PLANTING AND CULTIVATING.

The land selected for planting should be thoroughly and deeply tilled. If you have plenty of land, and it is desirable to do most of the work with horse and cultivator, lay off the ground so that the lines or furrows will be six feet from center to center, and set the plants at the intersections of the furrows.

The plants in this climate, especially if the soil is light, should be set two or three inches deeper than they were in the nursery. Spread the roots carefully and tramp the dirt firmly, leaving about six inches of the wood growth above the ground, to indicate the position of the plant. Pressing the dirt firmly about the roots is a very important matter. The new growth should start from the ground, and but two canes allowed to grow the first season. As soon as the young plants can be seen, work them out clean with cultivator and hoe, and keep them well

worked throughout the season. The first season should be devoted to the growth of as much strong, stocky wood as possible. Cut the canes back in August, and pinch off the side branches in proportion. This severe pruning must be resorted to to insure a substantial growth for the next season. A crop of vegetables can be grown to advantage the first season between the rows, which will be more likely to insure good cultivation.

PRUNING.

The operation of pruning the raspberry is simple. In general field culture but little is given except to cut out the old wood to the ground in the Fall. It is well, however, to shorten the leading shoots of new wood, and cut back the lateral ones. This operation is very necessary with the Black Caps, as their long, slender branches would otherwise be broken down with the weight of the fruit. I think it advisable to cut back severely all varieties of this class of fruit. The result of such pruning is much larger fruit, and the weight per acre as much or more than if the canes were left their full length.

TRAINING.

The best mode for field culture is to train to stakes. There is nothing saved by trying to cultivate without stakes; many of the canes will be broken down by the wind, by the horse passing through, and by weight of the fruit. The cost of the stakes is trifling compared to the loss of fruit by not using them. Every stake will save three times its cost in fruit and convenience of picking in a single season.

VARIETIES TO CULTIVATE.

The following are among the leading and most valuable sorts to cultivate for market:

Davidson's Thornless—this is one of the earliest varieties of the Black Cap family; it is a profuse bearer, very sweet and fine flavor, and its being without thorns is alone sufficient to make it desirable. The Miami, Seneca, Black Cap, and Golden Cap, are all favorite sorts and valuable. The Mammoth Cluster, following the abovementioned, and the latest of the Black Caps, is the most prolific bearer; very large, and fine flavor.

Following these we have the Purple Canes. The flavor of the fruit of this variety is distinct from Black Caps; the color generally red; the growth and habit of the canes is different, and they are propagated from the roots. The Philadelphia is undoubtedly the most prolific of this sort, of good size, and fine quality.

The Clarke is a new and very valuable sort for our climate; its large, thick, and heavy foliage being well calculated to protect the fruit from our hot sun. I think it better adapted for our climate in this respect than any I have grown, though there are other sorts that no doubt could be successfully and profitably grown here.

THE BLACKBERRY.

This is another very desirable and almost indispensable fruit. It belongs to the same family and genus as the raspberry, and has the same general characteristics, and the same method of propagation and culti-

vation are applicable to it. It does not require a soil as moist nor so rich as the raspberry, as it is a larger and coarser growing plant. If the soil is very rich, the canes will make a very rank growth, and will not produce as much fruit as those of moderate growth with well ripened wood. If it is intended to cultivate them both ways, the plants should be set eight feet apart; if in hedge form, three by eight feet would be a proper distance.

VARIETIES FOR CULTIVATION.

The New Rochelle or Lawton, until quite recently, was considered the leading berry for market. It is a vigorous growing sort and very productive fruit of the largest size, black and juicy, but does not become sweet and palatable until too soft for market. Within a few years new and better sorts have been introduced which bid fair to supercede it. It is one of the latest varieties now in cultivation.

The Dorchester is one of the earliest as well as one of the best market varieties. Fruit—long, black and sweet as soon as it colors; it is a vigorous grower, moderately productive. It is followed by the Wilson's Early, a new sort and a valuable acquisition; it is a very large berry, long, oval, shiny black, firm, rich, sweet, and good; it is a profuse bearer, and needs to be well cut back or it will bear more than it can mature; it ripens its fruit very early and continues in bearing but a few weeks. Before the Wilson's Early are gone the Kittattinny is ready for market. This is an old variety, though new to the public. It originated in New Jersey, on the Kittattinny mountains, about twenty years ago. Within a few years its true merits have become known, and it is now being very extensively disseminated. The berry is very large, deep, shining black, long, oval form, rich, sweet and excellent, with the old wild blackberry flavor. I place the Kittattinny at the head of the list of blackberries; it has no equal, in my estimation, among blackberries, and will, before long, supercede all others now in cultivation as a market variety. I have several other varieties under cultivation, but do not consider it worth while to speak of them, as the above mentioned sorts I consider the leading ones, and the most valuable varieties now in cultivation, and with these we can have berries of the finest flavor, from June until October. The cost of cultivation of these berries I should judge to be about one fourth of the gross receipts obtained from sales of the fruit, if we include the picking. The profits to be derived from an acre of berries is a matter of speculation. When other fruits are abundant in the market, blackberries often rule very low.

REPORT OF THE ORGANIZATION AND PROCEEDINGS

OF THE

CALIFORNIA

Vine Growers' and Wine and Brandy Manufacturers'

ASSOCIATION,

BY THE CORRESPONDING SECRETARY.

This Association was organized on the twenty-first of February, eighteen hundred and seventy-two, and the following Constitution was adopted:

Section 1. This Association shall be known as the "California Vine Growers, Wine and Brandy Manufacturers' Association."

Sec. 2. The objects of this Association are: encouragement and improvement in all departments of the wine industry.

Sec. 3. The officers of this Association shall consist of a President, two Vice Presidents, a Secretary, and Treasurer, who, together with four Trustees, shall constitute a Board of Directors.

Sec. 4. The officers and Trustees of the Association shall be elected annually, on the fourth day of the Annual Fair of the State Agricultural Society, and shall hold their offices for the term of one year from the first day of the succeeding month, at which time all memberships shall expire, unless renewed by payment of the annual dues.

Sec. 5. The office of the Association shall be at the Capital of the State.

Sec. 6. The Board of Directors of the Association shall have the general management of its affairs, and shall provide for an annual exhibition of the products of the vine, in connection with the Annual Fairs of the State Agricultural Society, and may offer such premiums as they may deem necessary to bring out a full exhibition. They may make such rules and regulations to govern the same as they shall find expedient. They shall make an annual report to the Association at each annual meeting, such report to include the facts and statistics collected, and general information gained, on the subjects for the encouragement of which the Association exists, together with such suggestions as the situation of the industry may seem to require; also, including the receipts and expenditures of the year.

Sec. 7. The Secretary shall receive all funds of the Association and pay the same over to the Treasurer, and keep a correct account of the

same, which shall at all times be open to inspection by any member of the Association. He shall also conduct all the correspondence of the Association, and perform such other duties as usually devolve on Secretaries of similar associations, and shall receive such compensation for his services as the Board of Directors shall determine.

SEC. 8. The Treasurer shall receive and receipt for all moneys of the Association paid him by the Secretary, and pay the same out on the order of the Board of Directors, signed by the President and Secretary. He shall submit an annual report of receipts and expenditures to the Board of Directors previous to each annual meeting of the Association.

SEC. 9. Any person interested in the objects of this Association may become a member thereof by paying to the Secretary the sum of two dollars and fifty cents, and one dollar annual dues thereafter.

SEC. 10. This Constitution may be altered or amended at any annual meeting of the Association by a two-thirds vote of the members present.

FIRST BOARD OF DIRECTORS.

President—B. D. Wilson, Los Angeles. Vice Presidents—A. Schell, Knight's Ferry; B. N. Bugbey, Folsom. Secretary—I. N. Hoag, Yolo (P. O. address, Sacramento). Treasurer—J. H. Carroll, Sacramento. Trustees—Wm. McPherson Hill, Sonoma; J. R. Nickeson, Lincoln; S. L. Wilson, Sacramento; Robt. Chalmers, Coloma.

STANDING COMMITTEES.

On Cultivation of the Grape and Pruning the Vine—I. N. Hoag, of Yolo; Robert Chalmers, of El Dorado; Geo. West, of Stockton; B. D. Wilson, of Los Angeles; J. R. Snyder, of Sonoma; B. N. Bugbey, of Folsom; J. R. Nickeson, of Lincoln; G. N. Swezy, of Marysville; L. J. Rose, of Los Angeles, and Dr. J. Strentzel, of Contra Costa.

On Wine Making and Clarification of Wine—A. Haraszthy, of San Francisco; ——— Craig, of Sonoma; Geo. Gozinger, of San Francisco; Matthew Keller, of Los Angeles; B. N. Bugbey, of Folsom; B. D. Wilson, of Los Angeles; Robert Chalmers, of Coloma; J. R. Nickeson, of Lincoln; Geo. West, of Stockton; J. Strentzel, of Martinez; Jacob Nought, of Sacramento, and A. Eberhardt, of San Francisco.

On Manufacture of Brandy from the Grape—General Nagle, of San José; Geo. Johnston, of Sacramento; L. J. Rose, of Los Angeles; Robert Chalmers, of Coloma; O. W. Craig, of Sonoma; Chas. King, of St. Helena, and B. N. Bugbey, of Folsom.

On Casks, Vessels, Press, and Machinery—Geo. Johnston, of Sacramento; J. R. Nickeson, of Lincoln; Charles Strobel, of Sacramento City; Robert Chalmers, of Coloma, and Samuel Dodd, of Lincoln.

On Statistics—Geo. Johnston, of Sacramento; Geo. W. Applegate, of Placer; I. N. Hoag, of Yolo; L. R. Chamberlain, of Placer, S. L. Wilson, of Sacramento, and Joel Clayton, of Clayton.

On Memorial to Congress—B. D. Wilson, of Los Angeles; H. Larkin, of El Dorado; L. M. Schrack, of Mokelumne Hill; Geo. Johnston, of Sacramento; A. Hewel, of Knight's Ferry; Robert Chalmers, of Coloma; I. N. Hoag, of Yolo; A. Schell, of Knight's Ferry; Samuel Dodd, of Lincoln; Mr. Caldwell, of Sonoma, and S. L. Wilson, of Sacramento.

On the Best Variety of Grapes for General Use—J. R. Nickeson, of Lincoln; Geo. West, of Stockton; J. J. Ott, of Nevada; Joel Clayton, of

Clayton; Samuel Dodd, of Lincoln; D. Chamberlain, of Yuba; Dr. Lockwood, of St. Helena; C. G. Carpenter, of Diamond Springs; I. N. Hoag, of Yolo, and John H. Carroll, of Sacramento.

On Classification of Grapes—J. A. Lockwood, of St. Helena; J. Strentzel, of Martinez; J. R. Nickeson, of Lincoln, and J. DeBarth Schaub, of Los Angeles.

At the last meeting, on the twenty-first of February, among other business, the following reports were read and discussed:

REPORT ON CULTIVATION OF THE GRAPE AND PRUNING OF THE VINE.

Mr. President and members of the Association: Your committee on the cultivation of the grape and pruning the vine, have the honor to submit the following report:

LOCATION AS TO CLIMATE.

The vine does so well in all portions of the State, when on proper soil, that your committee feel called upon to say but little on the subject of climate. From the northern to the southern extremity of the State, and from the seacoast counties almost to the summit of the Sierras, the vine is at home and flourishes well, bearing an abundance of luscious fruit. The rule of success is general and the exceptions are local. The damp and foggy atmosphere of the immediate seacoast is to be avoided, as not congenial to the grape, and any locality where the cold winds direct from the ocean prevail to a considerable extent must be set down as unfavorable to the success of the vineyard. With this single exception your committee can recommend the climate of California as universally favorable to the cultivation of the grape for all the purposes for which that delicious fruit is used, and would only recommend different locations for different varieties and for different uses. For instance: late-ripening grapes and rapid wood-producing vines should be planted on a southern exposure, while those that ripen early and produce but a small growth of wood, do better when less exposed to the direct rays of the sun.

SOIL.

In selecting soil for the vineyard, California presents an abundance of varieties, so that there is no necessity of planting the vine in soil not adapted to its growth and perfection of fruit. Avoid the stiff, impervious clay and the loams, too rich in vegetable matter, as unsuitable to give healthy vines, or fruit of a high degree of delicate flavor and the proper quantities of saccharine matter. The earthy taste so perceptible in some of our California wines, has its origin, to a great extent, if not entirely, in the too great predominance of decayed vegetable matter in the soil on which the vine is grown. No vineyard should be planted on the rich alluvial soil of our river bottoms with the expectation of producing good wine, nor are the small valleys in the foothills as favorable for this purpose as the less fertile soil of the surrounding elevations. A subsoil of broken decomposed lime or sandstone, slate or granite,

with evidences of volcanic debris, is undoubtedly the best. The vast quantities of red lands of the second elevation from our river bottoms, and extending back to the foothills in all portions of the State, are well adapted to the growth of the grape for the table, for raisins, and for wines and brandies, but for the light table wines a more elevated location is deemed preferable.

PREPARATION OF THE SOIL.

Having selected the location, the next step is to prepare the soil to receive the vine. Whether the land has been previously cultivated or not, it should be thoroughly cleaned of all roots, trees, or stumps, and well plowed and subsoiled to a depth of from fourteen to eighteen inches the Spring previous to planting. Before planting let it be well plowed again and harrowed and cultivated until thoroughly pulverized, and then when rolled it is ready for marking off for the rows of vines. This process is done by different cultivators of experience by entirely different modes, and the great question in marking off the land and preparing the proper holes for the vines and planting them in straight rows for convenience in after cultivation is, after all, one of economy—the performance of a mechanical operation rather than one of principle, as affecting the future growth and production of the vine. Especially so since all argue as to the necessity of care and thoroughness in the performance of every part of the work. All agree that the vines should be planted about six to eight feet apart each way. All agree that the holes should be dug from eighteen to twenty inches deep, and should be at least that number of inches in diameter. All agree that they should be filled with well pulverized surface soil, and that the soil taken from the bottom of the hole in digging should not be returned to the hole for the young vines to start in. All agree that but one bud of the vine or cutting planted should be left above the surface, while some maintain that in case cuttings are planted instead of rooted vines it is better to cover the top end of the cutting slightly with soil, so as to protect it from the drying winds and hot rays of the sun while making its first efforts at separate and independent life.

DIFFERENT MODES OF PLANTING.

Of the several members of your committee, Snyder of Sonoma, Strentzel, of Contra Costa, Bugbey, of Sacramento, and Chalmers, of El Dorado, lay off the land by any convenient method—as a small plow—in squares of eight feet each way, and dig the holes at the intersections of these lines to receive the vines or cuttings. Swezy, of Yuba, and Nickeson, of Placer, on the other hand, make trenches eight feet apart across the field one way by running the plow back and forth say three times, turning the furrow out, thus making the team do the greater part of the labor of digging the holes. This being done, they use a long light pole, marked off at intervals of eight feet each, to locate the hills in the other direction, and complete the work of making the hole with the shovel. Having planted the vine and leveled up the land immediately around the same, they, with one horse and small plow, turn the dirt back and fill the trench.

CUTTINGS AND ROOTED VINES.

There seems to be a considerable difference of opinion and practice between the different members of your committee, as to whether it is

the better plan to plant cuttings in the vineyard, where they will not again be disturbed by transplanting, or to plant them in beds, for rooting, to be lifted carefully at one year of age and transplanted permanently in the vineyard.

Messrs. Snyder, Bugbey, and Swezy practice the former course, with some exceptions; while Messrs. Chalmers and Nickeson practice the latter, and urge strong reasons for it. Bugbey takes the precaution to plant two cuttings in each hole, to insure a growing vine, placing the bottoms in opposite sides of the hole, so as not to interfere with the roots of the one while lifting the other the following Spring, in case both grow.

Dr. Strentzel, speaking of this particular branch of the subject, says: "If the growth of a cutting could always be secured, it would be preferred, as the first roots strike out regularly, the root end of the cutting heals over smoothly, and it makes a healthier and thriftier vine. But some soils are naturally too dry; some years the rainfall is scanty, in others the ground cannot be put in condition until late in the season, and under such circumstances one year rooted cuttings, carefully lifted and set, insure a better stand."

On the same subject, Nickeson says: "Plant good rooted vines, by all means. Upon this depends all your future prospects, for if you plant cuttings to remain in the vineyard, the results will be unfavorable, and you will always regret it. Plant cuttings and they will strike out roots at the bottom that will go down to the water, if possible, and never throw out any surface feeders, which is necessary to get heat, light, and air, that will produce good feed for the fruit. The natural tendency of a cutting thus planted and rooted is to make an abundance of wood, but not fruit. What fruit it does produce will be inferior in bunch and berry, and destitute of saccharine matter that is necessary to make good wine. I think the reason why we have so much poor acid wine in California is attributable to planting cuttings instead of rooted vines. Nor is there any economy in planting cuttings. The percentage in loss, and the trouble and time in resetting, and loss of time in securing a bearing vineyard, makes this method of starting a vineyard cost more than to plant good rooted vines at first." This distinction is entitled to more consideration than is generally conceded to it. To insure good well developed grapes of good quality, and a plenty of them, we want to encourage side and surface roots, and planting rooted vines one year old is the best way to make success certain.

STAKING THE VINES.

Every vine or cutting planted should have a stake by its side to which to tie the young cane and insure an upright start, and to prevent the winds or teams from bending it over or breaking it off. This stake should be as high out of the ground as it is intended to train the vine, and no more, and should remain in its place until the body of the vine has attained sufficient age and size, or strength, to maintain an upright position unaided, even when loaded with fruit. Some cultivators place these stakes before planting, as a guide in digging the holes, while others set them after the vines are set; but this is a matter of convenience in practice rather than of principle. But be sure not to neglect setting them at all, as very much depends on securing an upright position of all the vines in the vineyard.

SELECTING CUTTINGS.

Whether cuttings are to be set direct in the field or be rooted in the bed, much care and judgment is required in selecting and preparing them for setting. The butt cuttings, or the ends of the cane next the old wood, are always preferable, as a less change is required for such cuttings to become rooted vines. Those having short joints are preferable to those with long joints. Never use suckers for cuttings. Cuttings for planting direct in the yard should be from eighteen to twenty inches long, while a foot is long enough for rooting in the bed. In either case the butt of the cutting should be cut off close below a joint so as to have no dead wood below where the lower roots form and put out. The top of the cutting should be cut off at least half an inch above the upper joint so as to insure the growth of the butt at this joint. Both these places should be cut with care to prevent jamming or splitting the end of the cane—and very smoothly, so the wound will heal quickly. If much time is to intervene between the time the cuttings are prepared and the time of setting them, they should be kept in a very damp place, and some recommend placing the butts of the bundles in living water or burying them in the ground and covering them entirely. The latter practice would seem the most natural, and will facilitate the healing of the cut at the butt end and the change necessary to form roots.

CULTIVATING.

There is but one opinion as to the necessity and value of frequent and thorough cultivation of the vineyard. Let the plow and horse-hoe be used without stint, keeping the soil thoroughly pulverized and clear of weeds. Each vine should also be hoed well and frequently, so as to keep the weeds all down and the soil immediately about it mellow and in a lively, moist condition. This should be followed up from year to year, as much of the future value of the vineyard depends on thorough cultivation and rapid healthy growth while young.

IRRIGATION.

Irrigation should never be resorted to for the young or old vineyard unless absolutely necessary to insure life and healthy growth, and your committee are of the opinion that good cultivation will secure these ends in all but very few localities in the State. The young vineyard should be treated as it is intended to treat it when older, that its habits may conform to the necessities of its future life. One of the greatest points favorable to the climate of California for vine growing and wine and brandy manufacturing from the grape, is the absence of rain during the Summer season, thus securing health to the vine and the proper qualities to the grape. Then let us not by irrigation spoil the effects of this so important a condition of nature.

PRUNING.

The first year after planting the cutting will need no pruning, nor will the rooted vine, except to lop off any extra suckers or shoots that may start out below the one left at the top to grow. When this has attained a growth of from fifteen to eighteen inches, it should be cut

back to about one foot, being careful to keep it in an upright position by tying to the stake, as before intimated. This cutting back will give the body of the vine stock and size, and will encourage the development of the upper buds, thus forming spurs about one foot from the ground. The first Winter, or the first pruning proper, should be performed in the early part of Winter, when the sap has entirely left the cane and descended into the roots. The two upper spurs should then be cut back to two buds each, not counting the dormant bud, and all spurs or suckers below these should be cut smoothly off, and the old wood projecting above the shoulder or point where the new cane joins the old wood, should be pared smoothly off, and the ground be thoroughly cultivated as on the previous year. At the second pruning three or four spurs may be left on the vine, according to its strength, and so located as to preserve an equilibrium in the head. These spurs should be cut back to three buds each. No Summer pruning should be practiced except to keep off all undergrowth or suckers, and, perhaps, shortening-in some of the spurs to keep an equilibrium.

At the third pruning, four or five spurs may be left on the vine, cut back to three buds each. The two outer buds will produce some fruit, while the lower one will probably produce wood and no fruit. Your committee believe, as a general thing, better results may be realized by leaving less spurs than is generally the practice, and allowing these a greater length. Some vine growers of experience practice leaving one more bud on vines of all white varieties than on those of colored varieties, the vines being naturally more vigorous and capable of sustaining a greater crop of fruit. The same practice is followed in pruning all varieties bearing a small bunch and berry. The Catawba, Isabella, and all vines of similar habits, should also be allowed a larger number of fruit-bearing buds on each spur, and a less number of spurs than most other varieties. This practice increases the quantity and improves the quality of the fruit.

PRUNING AND CULTIVATING ON LOW, RICH LANDS.

The above observations are applicable to the care of vines on all land proper for the cultivation of the vine for wine purposes. On the low, rich river bottoms, where a large amount of wood-growth is the tendency, and where the vines are apt to mildew, quite a different treatment is required. In the first place, on such lands the pruning should not be done until in the Spring, when the buds have started well, and on very rich and damp land this may be delayed with advantage even until the blossoms are making their appearance. Then a smaller number of spurs and more buds on each spur should be the rule. The vines will bleed profusely when pruned, and this will do them good, that is, it will check the naturally too rapid and rank growth of wood, and act favorably in the development of fruit. It will almost universally prevent the vines from mildewing. The cultivation, too, should be different on such lands. Instead of plowing deep and pulverizing the soil so as to retain the moisture in the soil, as on the high and dry lands, the cultivation should be with a view to produce the exact opposite condition. The ground should not be plowed until the weeds have obtained a good start in the Spring so as to exhaust as much moisture from the soil as possible, and then it should be plowed very shallow—just deep enough to cut the roots of the weeds below the surface. The whole cultivation of the season should be conducted with a view

to keep the weeds from getting too high and going to seed, instead of for the purpose of keeping the soil mellow and damp. Your committee submit the above few suggestions, hoping they may be of some benefit to some of the vine growers, and at some future time may take occasion to give the subjects touched upon a more extended consideration. We would recommend that the association take steps to secure as much as possible the individual experiences of growers in different localities and on different soils, for publication for the general good.

I. N. HOAG.

OBSERVATIONS ON THE PLANTING AND PRUNING OF THE VINE.

At the threshold of successful viniculture our attention is called to the selection of the most advantageous location for a vineyard. With the long, dry, warm season of California, an exposure due south is not indispensable; a variation to the east or west is far preferable, and even a northern gentle slope may be admissible. Success here depends more on the quality of the soil as being deep, rich, friable, or easily worked; of sufficient descent for natural drainage, and well sheltered from the prevailing heavy winds. A subsoil of broken, decomposed slate, lime, or sandstone is always preferable to stiff, impervious clay. Our virgin soil, formed from the attributes of surrounding mountains, contains sufficient pabulum for plant food; only the excess of any one, either clay, lime, or sandstone, has its particular character of being more or less retentive, or favoring the absorption of moisture. The natural growth on any given spot is the best criterion of its quality.

The selection of certain varieties of grapes to be planted must be influenced by the uses contemplated. Some are most suitable for table use in the fresh state, or dried for raisins; others for converting into brandy; others for wine; but for whatever intended, it cannot be lost sight of that only the best varieties of either class should be chosen. Each variety possesses a distinct character, which is certainly modified by the soil and climatic peculiarities of a district; still it retains its distinct type of superiority. It is only of late that, by the enterprise, perseverance, and good judgment of the pioneers of viniculture, among whom the lamented Col. Aug. Haraszthy was preëminent, we are enabled to make our selections from the whole range of cultivated vines in all lands, and to adopt for our own the experience gained during centuries of European viniculture, thus placing California on an equal footing with the best and oldest.

The preparation of the soil claims our careful attention. If not previously cultivated, it ought to remain in the Summer fallow one season, and in the Spring be cross-plowed deeply and subsoiled; if naturally mellow and sandy, a partial subsoiling in the future rows of vines will answer, but it is always upon the thoroughness of the work that a thrifty growth of the vine depends. The rows should be perfectly straight, with broad avenues conveniently located for access. If the piece of ground is of irregular shape, a base line is to be surveyed on the longest diameter, and another at right angles to it on one corner, as a basis for extending parallel lines with perfect accuracy. By stretching a line and measuring along it with a suitable pole, the places for the holes can

be marked with small sticks. The holes should be dug at least two and a half to three feet each way, and be filled in with the richest mellow top-soil, and whenever practicable, it is well to use a lasting compost of broken bones, gypsum, or lime, spread in the bottom of the holes. Distance between the vines: for strong growing varieties, seven by eight feet, or eight by eight, is necessary; though for vines of slender growth five by six, or six by six, will answer. It is my experience that after ten or twelve years the vines require all, even the largest space. If the soil can be enriched from year to year by liberal manuring, the vines may be planted closer, thus gaining somewhat in the quantity of fruit, but with greater inconvenience in after culture, and also probable deterioration in quality. It is claimed by many that in poor soils the vines should be planted closer; but it certainly seems evident that in such soil the vine requires a larger space to secure food, just as a bullock would on a scanty pasture, provided it is not designed to exhaust the soil in the shortest time.

Some difference of opinion prevails regarding the choice of cuttings or of rooted vines for stocking a vineyard. If the growth of a cutting could be always secured, it should be preferred, as the first roots strike out regularly, the root end of the cutting heals over smoothly, and it makes a healthier and thriftier vine; but some soils are naturally too dry; some years the rainfall is scanty; in others the ground cannot be put in condition until late in the season, and under such circumstances one-year rooted cuttings, carefully lifted and set, insure a better stand. Older vines are objectionable, as they get more or less injured in transplanting. Cuttings fifteen to eighteen inches long are desirable. In dry, sandy soils, long cuttings do best; in moist and heavy, short ones. Having selected a location, prepare the soil, determine the most profitable use to be made of the fruit, and accordingly the variety of grapes, secure cuttings from healthy, thrifty, growing vines, with the butt ends smoothly cut close to a bud, and having kept them in moist earth from the time they were pruned off, we begin planting as early as the season and circumstances may permit. If the planting must be delayed, or if the cuttings have not been preserved in a perfectly moist state, they should, for several days previous to planting, be placed in bundles in some running water, but with only the lower half immersed. Success in rooting cuttings depends upon ample moisture and the compact pressing of the soil around the cut end; a pint of water to a cutting will often determine its growth. After the holes are half filled in as previously stated, the operation of planting proceeds rapidly; if rooted vines are used the filling-in of the hole is modified in a manner securing the proper spread of the roots. A line is then stretched along the row, the spaces measured with a pole, say twelve or fourteen feet in length, a dibble hole made in the exact spot, the cutting inserted in it perpendicularly, the earth pressed closely around it and watered, the hole filled up even with the ground, covering slightly the topmost bud; a small stake is then placed to mark the spot, and our vineyard is started. The first season but one shoot is allowed to grow, and that tied to a stake and the end nipped off to eighteen or twenty inches, and thus a stocky growth is at once maintained. Second year the vine is cut to two eyes, to secure against accident, the dry top is pared off neatly, and after the ground is plowed and hoed the weakest shoot and all suckers are taken off and the other is tied up, and when neccessary, pinched-in to maintain a hight of about two feet. Excepting the Isabella and kindred varieties, all grapevines do best here when trimmed low, even trailing

on the ground; still, to avoid lumps of dirt being taken with the bunches and also early rains causing them to rot, it is best to have a stem ten to twelve inches high, which is accomplished at the third year's pruning, by cutting the cane as high as desired and rubbing off the lower buds, permitting only the uppermost two shoots to grow. These are to be staked up, all suckers removed, and the canes shortened as formerly. Fourth year the two canes are pruned to two buds each, from which four canes are grown, and again these are pinched-in, keeping them to about three feet high; the ends of the laterals are also shortened one leaf. The vine now begins to develop a symmetrical shape, with an upright, self-supporting stem. The fourth year also, according to the good quality of the soil and the proper attention given, we may expect a very fair crop of grapes. The fifth year the four canes are cut to the first bud above the collar on the upper side of the arm or branch; if there happens to be a bud underneath it should be removed. Thus we obtain mostly two canes from each arm, forming a compact, regular head.

At each Winter pruning the wood should be cut one eighth of an inch above the bud, with a sharp knife or good working shears, to avoid fracturing or mashing up the end; and if taken so close to a bud the new growth will soon nearly cover the cut, or if not, the small stump is easily pared off, and will heal over the next season, thus promoting the longevity of the vine, as nothing is more destructive than notches and dry stumps, which check the growth and induce decay.

There seems to be much diversity of opinion about Summer pruning. Certainly, an indiscriminate slashing of the growing canes is not to be permitted, and the general rules are the same as in the pruning of other fruit trees. The work begins as soon as the young canes are twelve or fourteen inches high, or about the fourth leaf above the blossom, by pinching off the terminal leaf. This not only throws the sap to the forming blossom racemes, but promotes the solidifying of the new wood, rendering it less easily broken by heavy winds. The shortening-in is repeated during the season, according to the exuberance of growth, always removing only the ends of the shoots, though some of the most rampant laterals may be taken off half their length.

Judicious Summer pruning prevents the formation of unnecessary wood, economizing thus all the sap to the conversion into fruit and its support; the vine remains in compact shape, and still with an abundance of leaves to perform their function, and the fruit is well shaded from a too scorching sun.

A most reprehensible practice, showing alike the lack of knowledge and of judgment, is that of removing from the vineyard all the prunings of the vines and letting them go to waste, thus exhausting the soil rapidly of those essential elements which sustain a healthy vegetable life. It is the same skimming, vandalic process followed in other agricultural operations in California. If we are not able to enrich our vinelands by the constant addition of artificial manures, often costly and inaccessible, at least all the prunings should be chopped up and plowed under the soil, eventually to return again to the light in an increasing luxuriance of leaf and luscious fruit.

J. STRENTZEL, Contra Costa.

PLANTING AND PRUNING THE VINE.

To the Chairman of Committee on the Cultivation and Pruning of the Grape:

I beg leave to report, first, on location. I prefer a granite formation, because it is better adapted to the growth of the grape, producing more saccharine matter and is more easily cultivated. Next, I would prefer slate, with a high and dry location and perfect drainage, so that the roots will not enter into the perpetual water, and as level as I could get it, with as few outcropping rocks as possible. Next, gently sloping hillsides. Remove the timber, stumps, and roots; plow the land deep and well, say from fifteen to eighteen inches deep; harrow, roll, and pulverize well; then lay off the rows eight feet apart both ways, and plant good rooted vines by all means. Upon this depends all your future prospects; for if you plant cuttings to remain in vineyard form the results will be unfavorable, and you will always regret it, for several reasons. Plant cuttings, and they will strike roots at the bottom that will go down to the water if possible, and never throw out any surface feeders, which are necessary to get heat, light, and air, that will produce good fruit. The effect of cuttings is to make wood in abundance, and not fruit; and what fruit they do produce is inferior in bunch and berry and destitute of saccharine matter, which is so essential to make good wine. I think that is the reason why we have so much poor acid wine in California.

We do not economize when we set out cuttings. The percentage in loss, and the trouble, waste of time and labor, make the cost more than to plant good roots at the start. I can tell by the kind and quality of the wood where I have set out a cutting. If good roots are planted they set two kinds of roots, a few deep feeders to get moisture in a dry time, but the most of them are surface feeders, essential to the development of a perfect grape. This subject is entitled to more consideration than is generally conceded to it. Upon this proposition depends our future success. If I were going to plant cuttings I would select a hard bed rock that the roots could not penetrate. I noticed in making an excavation eighteen feet deep, to build a wine house, in the rotten granite, solid though not hard, that the roots from cuttings planted eight years before had penetrated to that depth half an inch in diameter, when rooted vines had not gone to the solid rock. I make mention of this fact, for it is a lesson in nature that we should notice.

After the land is ready, get a lot of stakes eight feet long for sight and measuring poles. Set these up at convenient distances to run a trench by. As the plow passes up the first turn, set the stakes for the next row. Turn three furrows in a trench, making it eighteen inches deep. Every tenth row leave ten feet for a wagon road. In this way the horses do the most of the work. Then prepare a long pole of light material, say one hundred feet long; mark it correctly every eight feet, to dig holes by. Set up stakes across the end to start from. It is necessary to start from one end every time, so as to have the rows straight both ways. Lay this pole by the side of the trench. Be sure and see that the end of the measure is straight with the end line; if so, there will be no trouble. Set four or five men to digging holes. The holes should be dug in front of the mark on the pole, banking up dirt at the mark on it, so that the setters will have this guide to set by. When

through this row, return to the first end and start as before. One man will take roots in his arms and hold them in place, while another will with a shovel throw dirt around them to hold them. When a row is set take a one-horse plow and fill up the trench. In this way the holes need not be dug, except enough to get the roots fairly in and the vines straight. All of the old wood should be put in the ground, leaving out but one eye.

In this way a vineyard can be planted quickly and cheaply, and much better than if the holes were dug by hand. If strong roots are planted they will make sufficient wood the first season to form a good, straight shoot for the vine. When the young shoot gets eighteen inches high cut it off at twelve inches high. Place a stake by it and tie the top of the vine to the stake. The two top eyes will start and make spurs for a head. Keep all undergrowth below cut off so as to make them strong and stocky. At the next pruning time cut these two limbs off to two eyes. At the second pruning, when there will be plenty of wood to form a head, leave three or four spurs, cutting back to three eyes.

At the third pruning cut back to the three eyes. This season they will bear considerable fruit. Pains should be taken in forming a good, well balanced head, the wood equally distributed around the stake so as to give it a perfect equilibrium. In leaving three eyes on the spurs it does not induce so much non-bearing wood, as the first eye is a wood bud; the next two produce fruit. These second and third buds absorb the sap of the vine so as not to force the first. In this way there is less wood and more fruit, and foliage to protect the fruit from the sun and admit plenty of heat, light, and air for the development of the fruit. If pruned back to one bud the dormant buds will be forced, which will make wood and very weak. At the fourth pruning select six or eight of the strongest and best limbs of your head, always cutting back to the nearest to the old wood. In this way the head of the vine does not increase in hight. I think a vine trimmed one foot high is the best hight for many reasons: first, it is more easily cultivated; in plowing, the singletrees pass over the head and are less liable to break the shoots; the fruit is not so easily sunburnt; gets the benefit of the warmth of the earth at night. The fruit nearest to the end on the ground is less liable to mildew or any other disease. In fact, I have never seen a bunch of grapes lying on the ground mildewed, and generally they are larger and more perfect in bunch and berry. The ground should be well cultivated every year. I use a one-horse shovel plow; for breaking up ground, a small harrow made for that purpose. Plow both ways and harrow so as to pulverize; then level the ground, using the horse hoe to keep the weeds down and ground mellow through the Summer. The stakes used in supporting vines should be eighteen inches long, sharp at one end, driven in six inches by the side of the vine. They can be made of oak, redwood, or sugar pine cheaply. They can be removed the third year, as the vine will be able to stand alone. They can be used in young vineyards. Using stakes on a young vine is a great advantage in many ways. They keep the vines straight till they are able to hold up the fruit; they are more easily worked and bear more fruit.

J. R. NICKESON, Placer.

THE MANUFACTURE OF BRANDY.

Mr. President and members of the Association:

Your committee, to whom was referred the manufacture of brandy, have the honor to submit the following report:

For the year ending June thirtieth, eighteen hundred and seventy-one, there was manufactured in this State three million eight hundred thousand gallons of wine; the pomace and lees from which, without working any wine, should have yielded three hundred thousand gallons of brandy; but owing to oppressive revenue laws, imperfect distilling apparatus, and total waste of material, only one hundred and fifty-seven thousand gallons were made. The crop of eighteen hundred and seventy-one amounts to about six million gallons of wine, the pomace and lees from which should yield four hundred thousand gallons of brandy, while the amount actually made will not exceed two hundred thousand gallons.

It is impossible for small vintagers to work their pomace to advantage in stills heated by the direct action of fire; they cannot make a good brandy. But with steam and a proper rectifying column a good brandy, or perfectly clean spirit, can be made. The smaller the still the greater the waste, the greater the cost of manufacture, and, as a rule, the poorer the quality.

We would therefore suggest the formation of factories similarly conducted to the cheese factories in the East, where all the vinegrowers would be stockholders to the amount of their stock of grapes. Their wine and brandy would be manufactured by the most economical and effective machinery, and their product would go on the market of improved quality, and at reduced cost, enhancing the profit.

The most of the French brandy is grain, beet, or potato, spirit flavored. California may not furnish a brandy with the peculiar flavor of French; but it can furnish a perfectly pure grape spirit, with the particular flavor and bouquet of any of the high flavored grapes grown here.

In the manufacture of brandy from grapes, without making wine, it is necessary to add to each ton of grapes from one hundred to one hundred and fifty gallons of warm water, the temperature of which should vary with the size of the fermenting tubs, the temperature of the weather, and the grapes when crushed. The temperature of the tub, when full, should be from sixty-eight to seventy-five degrees Fahrenheit. The water should be first put in the tub and the crushed grapes added. After a few days, if the wine in the bottom of the tub is not attenuating as rapidly as it is at the top (and it seldom is), it should be drawn off and pumped on top, as the fermentation goes on more rapidly on top than on the bottom, and unless this is done there will be unfermented sugar in the bottom of the tub, while there is none on top.

Care should be taken to keep the skins, by means of a cover, under the wine. If allowed to float on top, the acetic and putrescent fermentation will soon set in, to the loss of quantity, and ruin of quality, of brandy.

The still of the Johnston Brandy and Wine Manufacturing Company, Sacramento, is probably the most convenient and economical now in use. In charging the still with pomace, it is conveyed by means of a car on a track, and emptied into the still through a manhole with movable hopper; when charged, the hopper is moved, main plate screwed down, and steam admitted through a coil of perforated pipe. The vapors from

the still then pass into a nine-chamber column seventeen feet high, in eight chambers of which there is a coil of pipe containing water. The water enters the upper chamber and passes through each successively to the bottom, constantly increasing in temperature, while the vapors, as they ascend through the chambers, are gradually decreased in temperature. So that by regulating the flow of water through the pipes the temperature of the column can be maintained at a point through which spirit of the desired proof only can pass, this being ascertained by a thermometer on top of the column, thereby running off the entire charge at from twenty to eighty-seven per cent above proof, at the option of the operator. The only portion requiring redistillation being a small percentage containing light ethereal oil, which, being lighter than alcohol, comes over on the first part of the distillation, in combination with some spirit, and to separate which they (the ether and spirit) are mixed with four or five times their bulk of water and redistilled. The bottom of the still is funnel shaped, with a discharge hole eight inches in diameter, covered by a plate held to its place by a lever and screw, which opened, discharges its contents in one minute.

As the brandy trade is not yet extensive enough to induce our distillers to use grain, beet, or potato spirit to increase the quantity, as is done in France, we can divest the brandy of most of its fusel oil and acetic ether, both of which are the most poisonous ingredients of distilled spirits, thereby producing a brandy much less injurious to the human system, which will develop bouquet in abundance in the course of a year. The quantity of brandy produced to the two thousand pounds of grapes at the Johnston Brandy and Wine Manufacturing Company was a little over forty-three gallons proof. From lots, one of seventeen tons and one of ten tons, worked separately, one yielded forty-nine and two tenths, and the other forty-nine and four tenths gallons, at proof, per ton; the average on the whole working being caused by a large amount of inferior grapes worked early in the season. This Company also worked thirty tons of grape skins, after fermentation, part of which had been pressed in a hydraulic and part in screw presses, from which they obtained eight hundred and sixty-nine gallons of proof brandy, or nearly twenty-nine gallons per ton. The yield would have been larger had the skins not been exposed for several days after pressing, before they were received into the distillery.

GEORGE JOHNSTON,
ROBERT CHALMERS,
Of Sacramento.

MANUFACTURE OF BRANDY.

California Vinegrowers' and Wine and Brandy Manufacturers' Association, Sacramento:

GENTLEMEN: I received a communication from your Secretary, dated the sixth instant, inviting me to attend a meeting of your Association, to be held in Sacramento on the twenty-first of February, and requesting me to accept the position of Chairman of the Committee on the Manufacture of Brandy from the Grape.

My engagements are of such a character that it would be impossible for me to accept the position of Chairman of the Committee named, and it will be equally impossible for me to be present with you at Sacramento on the twenty-first instant.

I need hardly assure you that I am with you most heartily in all that may be done to encourage the growth of the grape, to ascertain and encourage the selection of the best varieties of the same, and to facilitate the diffusion of all kinds of knowledge that may improve the quality of the wine and brandy produced. With this purpose I have hastily thrown together the following suggestions, knowing that you will credit me with good purpose, if you shall find nothing new in all that I may communicate.

One of the greatest interests in France, which is fostered by that Government in every possible manner, comes from the culture of the grape, and the manufacture of wine and brandy from it. The sale from this industry amounts to one hundred and eighty million dollars per year; a sum larger than the yield of the cotton crop of the entire United States at the exorbitant prices of the present time. Foreigners familiar with the subject, who have introduced the vine from Europe, invariably assure me that the vine and grape improve by transplanting into California; that the soil and climate of this State cannot be surpassed for that purpose; and that the fruit being superior, we only require time to know how to use it, when we must produce the finest wines and brandy in the world. The great difficulty that we encounter will be to get rid of old mistakes and old prejudices, and to convince others, after we have convinced ourselves, that the Mission grape, with the exception of some few favored locations, is inferior to many other of the European varieties; and that in planting, hereafter, it is of the utmost importance that the proper selections of the vine shall be made. It is unnecessary to refer to the varieties grown for wine purposes east of the Sierras, it being determined that they are inferior to the foreign grape. A great difficulty with the foreigner familiar with the subject comes from the great change in the character of the vine and grape in transplanting here, rendering all of his former experience of no avail. Again, he is required to await say four years to produce the grape; then he must wait from two to ten years to mature the wine; thus requiring from seven to twelve years to ascertain the result.

I have attempted to arrive at a result in less time, and test the peculiarities of the grape by converting the wine made of it into brandy. I find, by a careful distillation, that the especial bouquet and flavor of the grape may be fully developed in the brandy—the aroma appearing soon after distillation, and the flavor rapidly after two years. By these means I have found a marked difference between the brandy of the Mission grape and that made of the La Folle (Cognac grape), the Reisling (Rhine grape), the Rosa de Peru, the Pinaud or Burgundy grapes, and the Catawba; and of these the brandy is inferior to all except the Catawba, which, although in aroma is rather agreeable, the flavor is harsh, and improves very little with age. In Cognac, I was advised not to depend upon a complicated form of distillery. Henessy assured me that he preferred the primitive vessel and worm to any other form of distillery; that rectification was entirely unnecessary, and that charcoal was never used. He constantly impressed me with the importance of making white, not red wine, and that the character of the brandy would depend almost entirely upon the quality of the wine distilled.

I visited many brandy distilleries at the vineyards near Cognac, and found them, with few exceptions, of the most simple form—the fire being applied directly under the copper boiler that held the wine. Upper and Lower Charante is the most sterile of all the grape country in France; and the only grape growing there is the La Folle Blanche,

which makes a wine so detestably bad that it can be utilized only by being converted into brandy. This wine contains but six degrees of alcohol, producing low wines not exceeding thirty degrees at the first run. These low wines require a second distillation, both of which being made carefully, produces a brandy which requires no further rectification.

There seems to be a very prevailing opinion that brandy should be free of all the volatile oils, and especially of the fusel oil; and some persons engaged in the manufacture of brandy, or in the construction of stills, advise you that they can manufacture brandy of eighty-five to ninety degrees entirely free of fusel oil. I need hardly tell your Association that brandy without fusel oil is not brandy at all, and that when distilled at eighty-five to ninety degrees approaches so nearly to alcohol that, like it, it has neither odor nor flavor, and becomes neutral in both. The proper strength to be given to brandy when running from the distillery is, after the selection of the grape, the most important subject for investigation. It should vary with the material used, and can only be determined after close observation, by an experienced person of delicate sense of smell and taste. This point being once determined, distillation above it will diminish the bouquet and flavor, and distillation below that point will introduce an excess of the volatile oils, and the delicate character of the brandy will be lost, or rather disappear through the injurious effects produced by the excess of fusel and other oils. The requirements of the revenue laws, that a distiller shall run his distillery to a certain capacity, is a direct violation of the distiller's interest. My experience has been that the qualities of the brandy will very much depend upon the slowness of its manufacture. Formerly I made a gallon of brandy in two minutes; now I make a gallon in eight minutes—just fast enough to come within the capacity required by the Government.

Another subject of great importance, and considered in France as the one of the greatest difficulty, is the selection of the oak to be used for the brandy package. They assert that American oak will injure any brandy put into it. They employ the oak brought from Austria, to the exclusion of every other, and expect that the oak shall be not only not injurious to the brandy, but that it shall impart to it a peculiar taste that they consider highly advantageous. In the absence of all foreign oak I have been compelled to use the American, or Canadian oak, first steaming it thoroughly. I find that after steaming it for one hundred hours, with steam at twenty pounds pressure, the water from the condensed steam escapes of an inky color, disagreeably and excessively acid. The packages that I have adopted are oval in form, of about eight hundred gallons, supported upon four by eight timber, resting upon brick columns of fourteen inches, with solid foundations; the advantages being that the chime is all exposed, and that any leak can be readily detected and repaired, which cannot be done in a cylindrical or conical tank. My brandy house is constructed of brick, with brick partitions to divide the risk by fire, and is of the same level with the ground. The roof is made of metal, with openings covered with glass to admit the sunlight and increase the temperature. In Europe a wine must be excessively bad not to find a ready market, and those only are distilled into brandy that cannot be sold. In California our vintners, many of them, are men of small means, with heavy mortgages to carry at high rates of interest, and cannot wait for the ripening of their wines, or for a market after they mature.

Another heavy item is in the cost of the package, which, at twelve to

fifteen cents per gallon, renders the necessity of converting wine into brandy the more urgent. Again, we have not the intermediate, the wine merchant, with large capital at a reasonable rate of interest, ready to purchase the wines of the producer, and to hold them until matured, and to place them properly upon the market.

Of late years Americans have become familiar with the habits and customs of European people, and have learned that the most temperate people of the world are those living amidst the vine and grape, and who are accustomed to the use of wine. May we not appeal to those engaged in the temperance cause, and ask them to assist in the repeal of all laws that discourage the growth of the grape?

While the foreign grape matures in October, the Mission grape does not ripen before November or December, when the days are short, the sun far to the south, and the nights cold. To create and quicken the fermentation the roof over the wine tanks and the south side of the wine house should be made of glass; thus the additional warmth will so increase the fermentation of the wine by day as to carry it through the night without interruption.

The manner of pruning has much to do with the ripening of the grape. Upon the sidehills, with proper exposure and warm soil, where alone the vine should be planted, the grapes should grow near the ground; but in rich, cold, valley land, affected yearly by the late Spring frost, the vine may be raised to five feet with great advantage. By this change in pruning my vintage was increased from one hundred thousand pounds of grapes to four hundred thousand pounds; and upon portions of my vineyard, that had never yielded at all, I gathered over fourteen tons of grapes. In France the average yield does not exceed two hundred and fifty gallons of wine to the acre; in California it exceeds three times that amount, and as high as one thousand five hundred gallons of wine have been made from a single acre. Here, two years out of the five, the farmer fails to have a crop. The vine yields most of a dry season. Why, then, should not every farmer plant ten per cent of his farm in grapes, selecting the gravelly and most unproductive wheat land, and thus be prepared for every emergency? In France the vineyards are small, and do not average four acres. In the Cognac country every vintner is a distiller, and with his primitive still he does not make more than one or two pipes of brandy.

Henessy sells his brandy after two years, during which time he employs no extraordinary means for ageing it, merely drawing it from time to time from one package to another, and using felt covered with paper for the purpose of filtering it. Although very important, this could not be done under our revenue laws, the removal of the brandy from its original package being prohibited. The laws of Congress were made to govern the distillation of spirits from grain, and cannot be made to apply to the distillation of brandy. This is admitted by the Commissioner and others at Washington; but the whisky ring has proved so formidable that every effort to pass laws especially applicable to the distillation of brandy from the grape has been defeated. Sargent has always done everything possible, but without success. He has now additional strength in Houghton, and another effort should be made with greater promise of success, the importance of sustaining this great interest being much more appreciated since the presence of many members of Congress on the Pacific Coast.

There is no greater interest remaining undeveloped in the United States than that pertaining to the grape. In California we appreciate its importance. We acknowledge that it staggers under the difficulties

and uncertainties that surround it; and we ask that it shall not be overburdened with taxation; and that if we may receive no assistance, that intelligible laws may govern us, applicable to our necessities, and not filled with the most annoying provisions. We cannot be successful in this great national and State interest until all restrictions are removed from the grape and its products; and I would recommend that, if the Government will not assist us, that the Legislature of the State pay the tax for us.

Americans, as Frenchmen, should learn to distinguish between brandy and "mare brandy;" the former made of the juice of the grape, and the latter from the mare or pomace, or refuse of the grape, after the juice has been pressed from it. In France, "mare brandy" is designated and sold as such, at vastly inferior figures from that of Cognac brandy.

Some idea may be formed of the extent of a brandy establishment in Cognac, when you know that that of Henesy covers five acres of ground; that he has depots and agents over Upper and Lower Charante, an extent of fifty miles square, and that he is prepared to dispatch twelve hundred pipes, and fourteen hundred cases of brandy in a day. And some idea may be formed of the adulteration in the United States when you are informed that the shipment to New York from the above establishment has fallen from thirty thousand gallons per year to three thousand. The adulteration has gone to that extent that gentlemen prefer to drink whisky, knowing it is impossible to procure pure brandy; and that so certain are all physicians of this adulteration, that brandy is no longer prescribed. I have sent samples of brandy made of the Mission, La Folle, Reisling, Charboneau, Trousseau, Rosa de Peru, and Catawba wines, and would request your opinion regarding the order of merit due to each.

HENRY M. NAGLEE,
San José.

WINE MAKING AND FINING.

Having the honor of being appointed as one to make a report on wine making and fining, I will enter into this large and inexhaustible field, but only with fear, knowing full well that it is impossible to give in such a short space anything like a clear and comprehensible idea, particularly to beginners. Nevertheless, I will give my experience, the way I see it, and hope it may be of some advantage to our fellow wine growers.

Ripe, fine-flavored kinds of grapes will make fine-tasting wines, if properly managed, while such cannot be said of other kinds, or such that have not grown on proper ground. Low ground, particularly in California, with few exceptions, is not suitable for wine purposes; the country being of granite formation, which forms salts, collecting by rains in the valleys, together with an excess of vegetable matter, which makes it not only detrimental in wine making, but imparts a bad taste also. Mission or California grapes are rich in sugar when fully ripe, produce a great deal of alcohol, but have little flavor or bouquet. But this not being my object, I will return to my task. I will only make two classes—light and heavy wines—and leave out all different shades and colors. Light wines can be made in any part of the State where grapes will ripen perfectly. There are kinds of grapes which will never obtain that high percentage of sugar to be detrimental for making light

wines, even if apparently over ripe. In others the same end may be reached, when they are harvested as soon as they are ripe enough, and not left on the vines for evaporation and concentration. Early ripening is of great advantage. Wines will ferment more thoroughly and without artificial heat. Light wines require more care than heavy ones, particularly in a warm climate like ours. The casks are to be kept full all the time, and the sooner the wine is cleared from its lees the better, before warm weather sets in. Sulphur should never be used when wines are not fully fermented, for it retards the fermentation. Quick pressing of black grapes, particularly in warm weather, is of great importance, if the object is white wine. The color of the grape will be extracted by slow process, and will make it neither red nor white wine, which is objected to in the market. A good way is to press or crush grapes only a day after gathering, because they will cool down over night, and work may go on in this way until finished. The later running juices from the press, or when it shows coloring, should be kept separate, and may be used for red wine, which has to ferment on the berries to extract the deep red color. The most proper proportion for dry wines, independent of flavor, is from four and not much over five parts of free acid in a thousand, alcohol from twelve to fourteen per cent; and such wines are used in large quantities, they being a healthy beverage. But this requires the necessary instruments and practice to ascertain the exact state of ripeness of the grapes for that purpose; and it is the only way, as I think, to be positive and successful. If such proportions exist in the juice, together with a fine character of grapes, clean casks, and a proper temperature to ferment, there is nothing in the way of making a light, dry, and healthy wine. Dry and thoroughly fermented should all such wines be before they are offered to the market, otherwise they will have to be sold at a discount or to be rejected altogether. Sweet, heavy, or liquor wines are much easier managed, and generally take care of themselves after being made, being only the concentrated juice, sweeter and stronger. Here fine kinds of grapes make fine tasting wines, like the other. It is the sweetness, or the body, which prevents it from spoiling—like preserving fruits in sugar or alcohol. Different kinds and shapes, or artificial flavoring, is only a matter of taste. A thorough fermentation for dry or light wines, or nearly so, is the best fining, and any other is not often necessary. For fining red wines, gelatine is preferable, because it consumes more tannic acid. White of eggs does well; the yellow does no harm, but is useless. The quantity to be used depends upon the state of the wine. Light and repeated fining give a better result generally. White wines may be fined with eggs or isinglass, the latter to be dissolved in a little cold or hot water; the first is preferable. Well mixing and drawing off, in say from six to ten days, is very important. But I would not recommend fining wines to any intending to sell them to large establishments. Wines may be two or three years old and not be fully fermented, having had no chance or otherwise being detained. Fining takes out the ferment and only retards the ripening thereof. In conclusion, I think it will perhaps be better for our wine growers to try for themselves, and they will find a great many interesting problems to solve, which they perhaps think so lightly of at present.

J. KNAUTH,
Sacramento.

WINE AND BRANDY STATISTICS.

Mr. President and members of the Association:

Your Committee on Statistics beg leave to submit the following report: The making of a statistical report upon the grape growing interest of the State, and the products of the vine, is attended with much difficulty, and the figures given in most instances may be considered as only approximates, arrived at, however, from the best and most authentic data at hand. The cultivation of the grapevine and the manufacture of wine and brandy in this State is an industry that we may truly say is in its infancy, less than a one hundredth part of the cultivated land of California being in vines.

We find that in eighteen hundred and seventy-one there were about thirty million vines of all ages in the State distributed throughout forty-four counties. This is an increase of ten million since eighteen hundred and sixty-seven, or about two million five hundred thousand per annum for the last four years.

The entire area in grapes is about forty thousand acres, while it is estimated that there are at least twenty million acres well adapted to the purpose—four times as much as the entire area in use for grape culture in France. A large portion of this land is almost worthless for any other purpose, and can be had for one dollar and twenty-five cents to two dollars and fifty cents per acre. In eighteen hundred and sixty-eight there was produced one million eight hundred and eighty-four thousand gallons of wine and two hundred and fifty-three thousand six hundred and forty-three gallons of brandy; in eighteen hundred and sixty-nine, two million six hundred and thirty-six thousand gallons of wine, one hundred and sixty-nine thousand eight hundred and eleven gallons of brandy; in eighteen hundred and seventy, three million eight hundred thousand gallons of wine, one hundred and fifty-seven thousand and fifty gallons of brandy; in eighteen hundred and seventy-one (estimated), six million gallons of wine, two hundred thousand gallons of brandy. The value of the crop of eighteen hundred and seventy one to the producers may be stated as follows:

6,000,000 gallons wine at 30 cents	$1,800,000
200,000 gallons brandy at $1 50	300,000
Total	$2,100,000

To this may be added at least six hundred thousand dollars received for table grapes, consumed in California, and shipped to Nevada and the Eastern States and Territories. The average price obtained for these products (wine and brandy), when sent out of the State, is nearly thrice that sum. In some sections, where there are quite a large number of vineyards, transportation is so difficult and expensive that at least one half of the grapes are wasted, and the remainder are mostly used for home consumption, and are, therefore, almost unproductive of profit to the producer.

Then at least one half of the vines in the State are too young to be productive, or too far from a commercial market for the product to be

sold with profit. We then have the following showing of the product of twenty thousand acres of land, viz:

From wine	$1,800,000
From brandy	300,000
From sale of grapes	600,000
Total	$2,700,000

Or one hundred and thirty dollars per acre. From this may be deducted cost of cultivation, expense of making wine and brandy, and marketing crop, say thirty-five dollars per acre, and we have a net profit of one hundred dollars per acre.

From report of Chief of Bureau of Statistics we take the following statistics of imports for twelve months ending June thirtieth, eighteen hundred and seventy :

Spirits and cordials in casks, proof gals	1,652,196	$1,583,008
Spirits and cordials in bottles, doz	45,856	203,148
Wine in casks, gals	9,048,013	3,214,598
Wine in bottles, doz	520,623	2,586,316
Total		$7,587,070

From these few facts that we have been able to collect the thinking mind cannot fail of the conclusion that the great future of this State rests in her wine producing soils. From the increased amount and improved demand for our wine for the last five years, we hazard the assertion that in ten years the wine interest of California will overshadow either of the other principal staples of this State.

GEORGE JOHNSTON,
G. W. APPLEGATE,
I. N. HOAG,
L. R. CHAMBERLAIN,
S. L. WILSON,
J. CLAYTON.

REPORT ON WINE MAKING AND PRESERVING.

In my first report I mentioned that casks containing light dry wines should be full always, and I will only add some further explanation so that beginners may understand it more fully.

Casks, which under all circumstances must be clean and sweet, when first filled with wine juice or must cannot be kept full without loss, which should not be, especially if fermentation sets in at once as is the case in warm weather.

The running over, if it were only oxydated ferment without loss of

wine, would be well enough. But this running over of lees and wine is very apt to sour and fill the cellar or room with acetic or vinegar gas, transplanting itself, which answers very well for a vinegar factory. The casks want filling only so much as to prevent this. The carbonic gas generated by fermentation will keep the casks full for the time being, the superfluous will escape through the bung hole.

In strong fermentation a light covering answers very well ; but when it goes down or evolves less gas, it would appear necessary to either make the vent hole so small as to correspond with the quantity of gas generated or to use fermenting pipes.

The first method is not practicable ; for if not fully proportioned, vacancies will be created, and atmospheric air—the great generator and destroyer—will have a chance to penetrate and convert such light percentage of alcohol in solution to vinegar very readily. This is a well known fact, that the thinner alcohol is spread and exposed to warm air the sooner it will turn into vinegar ; and upon this principle vinegar factories are carried on. If anyone will examine the vacancy near the bung hole he will find it coated over with a slimy, oxydated matter, and being thin and half dry is the very thing to start the spoliation of wine.

For these reasons I prefer the use of the fermenting pipes. These consist of tin pipes (lead should never be used) or small india rubber hose, one end to go into a well fitting bung having a corresponding hole bored through it and fastened perfectly air tight, the other end bent over to go into a dish or can of water, penetrating not more than one inch. In this way the water will offer very little obstruction, let the excess of gas escape, close up again, and leave the casks full all the time.

If fermenting pipes cannot be had, then a very good substitute is to fill the hole bored through the bung with cotton. This will give vent to the gas and in a measure prevent the ingress of air, only care must be taken that the wine does not reach it. Stirring up occasionally is very promotive of fermentation, because it brings the ferment in closer contact again with the sugar and forces out the gas to make room for more.

After fermentation is over entirely, or when it appears that the gas does not keep the casks full, then is the time to fill up with wine and close the well fitting bung hole moderately tight. Fill up again whenever necessary and keep it full.

If the juice is of proper proportions, right temperature, and not charged with different kinds of salts, which are kept afloat by resinous matter that almost always accompanies them, or an excess of (ferment) vegetable matter not belonging or not necessary in the juice, it cannot fail to make sound dry wine.

It is impossible to prescribe a certain way of making wine. What holds good if the juice is constituted one way will not answer if it is otherwise. There are no secrets about the business, as so many are fond to believe, but all depends upon the quality of the juice itself. A fundamental knowledge and practice, to ascertain what treatment is wanting, is all that is necessary, and all little important doings and fineries do not amount to much.

Rags on bungs should never be used. They act like suctions; are most always wet, and sour in a short time. This will appear evident from the vinegar flies which collect around them. Pine bungs, steeped in oil, I prefer any time to oak, because they are driven better and will not crack so easy in dry weather. I have been rather long in describing

these points, but may be excused for the reason that my lines are directed to beginners only, through whose ignorance and carelessness a great deal of wine is spoiled every year, and offered for sale only to be rejected, for acetic acid is no product of the grape, but of decayed or oxydated alcohol. Wines started once that way cannot be cured entirely, and had better be stilled as soon as possible.

The practice of many drawing wine from the same cask every day for a length of time, or boring holes in it lower and lower, should be discontinued, for it not only spoils the wine but the cask also. When a cask is partly empty for some time, in a dry atmosphere, the staves will shrink and admit air, may the bung be ever so tight. These sieve-like openings allow not only the escape of the alcohol, but that of the ether, which gives the aroma also, the latter being even more flighty than alcohol. Such wine, when not positively soured, will appear flat and may be considered nearly worthless.

I have been speaking all this time of fine, light, dry wines, as they should be, and as they are mostly wanted, not of those strong, heady, half fermented ones, which in fact are not wines at all fit for use, and have spoiled our market East to a great extent. These will stand bad practice longer in draught, at home, which circumstance can easily be explained, as follows: Alcohol escaping, by opening so often, gives a fresh impetus or chance for a light after-fermentation, which fills the cask again with gas, and hence the opinion of many, that this or that man's wine will keep to the last drop. But such wines cannot be sent with safety any distance, as they are liable to spoil, burst the cask, and even a man's stomach, if it is not well bound.

Ordinary foreign wines imported, very often suffer on that account. Frequently they are sent before they are ripe, and as good luck will have it, sometimes arrive safely enough, with the exception of being turbid and forcing out the corks, if sent in glass. But there is this difference: what they lack in quality they make up in price. And I may here add, in conclusion, because this holds good throughout, that wines are admired for their taste and the invigorating effect they produce; taste makes their price, and not the amount of alcohol they contain.

From this it may be seen that not only the producing and making of fine wines is all that is wanting. The well keeping and handling, also, when for use, is very important, and needs correcting as much as anything else.

In giving these statements, I have in view, as may well be supposed, my own experience and practice in the winery of the Orleans Hills Vinicultural Association, and it is my firm belief that I justly can do so. I have had not even one cask of wine spoiled yet, even in the warmest weather. Besides, large shipments have been made East, and never yet a complaint of anything being spoiled has been made.

JACOB KNAUTH.

CULTIVATION OF THE VINE.

My experience in grape growing has been confined to San Joaquin County, where we have every variety of soil, from sand to stiff black clay, but a remarkably even climate; the thermometer during the Summer and Fall months ranging from seventy to ninety degrees. The subjects of planting and pruning were so fully discussed at your last

meeting that I will be brief. In preparing the land for a vineyard I plow deep (Summer fallow land is preferable), thoroughly pulverize and roll smooth; then lay the land off with a line and pole, and set stakes for each vine, after which the vines or cuttings are planted with a spade. Prefer planting two cuttings at each stake. The cost of plowing, pulverizing and planting will not exceed twelve dollars per acre. The cost of cuttings will depend on the varieties and number planted to the acre, say from six to twelve dollars per acre. The distance for planting will be governed by the variety and for what purpose the grape is to be used. For market I plant the Mission and other string growing grapes eight by eight. For wine we are planting six by six, and small growing varieties less. The first and second year cut the vine back to two or three buds; the third, tie them up to the stake, and at the Fall pruning leave the body of the vine fourteen or sixteen inches high. The strong vines would need tying up the second Fall. I never Summer prune the vines. Get a small crop the third and fourth year; commence paying the fifth. The last season our Mission vines eight and ten years old produced from eight to ten tons per acre, which is not an unusual crop.

The selection of varieties most profitable for planting in different localities is one of the most difficult points to determine. I have selected the following, which are grown around here and sufficiently tested for wine or market to warrant planting. For early market the Madeline Chasselas de Fontainbleau and Lady Sweetwater ripen the first of August and ship well; Black Malvoisie, Black Olive, Black Hamburg, last of August, bear well and fine flavor; Black Prince ripens from September first to tenth, strong grower, large bearer, ships well, one of the most profitable at present; Rien de Nice, good grower, bears well, fine color, last September; White Muscat of Alexandria, fine flavor, sets poorly some seasons, September; Black Morocco, fine large grape, shy bearer, brings a high price, October; Black Ferrara, grows and bears well, ripens late and keeps longer than any grapes we have in cultivation. Mission, when grown for table use, is large sized, fine color and flavor, and pays well. For wine we are planting White Frontignan; will produce from three to four tons to the acre; considered one of the best of the musk grapes; ripe middle of September. Reisling, White Tokay, Berger, Chasselas de Fontainbleau, all bear well and ripen early. Zinfindal bears large crops, makes an excellent white or red wine. Black Malvoisie, fine red or white wine. Black Burgundy, good bearer; makes red wine of good body. Black Malaga, good bearer; fine musk flavor. Mission I find best for port, sherry, and madeira. The last two will not develop their flavor until after the fifth year.

For Raisins.—White Malaga, good bearer; oval berry of good size; hard, pulpy grape, which dries well; ripens middle of September. White Muscat of Alexandria makes a fine flavored raisin; ripens rather late some seasons for drying outside.

We have a great many other varieties growing around here, all of which mature before the frost of November, many of which will, no doubt, prove profitable.

GEORGE WEST,
Stockton.

CHOICE OF VINES FOR WINE MAKING.

These remarks will be confined to the consideration of the best varieties of wine grapes. The market demand for table grapes and raisin grapes will readily determine any questions that may arise respecting individual merits. It is already known with sufficient accuracy what grapes keep best, look best, and dry best. We know that the Muscat of Alexandria and Flame Tokay are conspicuous in the category of grapes notable for splendid appearance and safe carriage; that the Muscat is in prominent place for raisin making, and with the White Malaga, extensively used for the raisin of commerce. That the Fiher Zagos possesses qualities for raisin grapes in having a delicate skin, but few seed, and a natural tendency to dry early, that has commended it for raisin making, but that the superior size of its competitors has given them the preference. The Muscats, Tokays, Chasselas, Hamburgs, and other fine varieties of table grapes now in successful culture among us, leave nothing to be desired in this department of vine culture.

But the question as to the best varieties of grapes for wine making presents more difficulties. In choosing vines to grow wine grapes, regard should be had to their adaptability to soil and climate, as well as to the description of wine which it is intended to produce. In Europe this choice is less difficult than in California, where we cannot profit by lessons of long experience. In Europe, however, circumstances require them to calculate whether the quality of the product is more profitable than quantity. Here we cannot afford to sacrifice quantity to quality. If there are favored sites in California like certain spots on the Rhine, in Burgundy and elsewhere, where two hundred gallons of a choice wine brings more money than one thousand gallons of a wine in less repute, they remain to be discovered. Our object should be to ascertain what varieties of grapes will yield the largest amount of wine, having berries which contain in suitable proportions the elements best adapted to the manufacture of fine wines. This is the more important, because of the rule that quantity and quality rarely go together. Du Brueil lays it down as an axiom, that quality exclusively should not be thought of except in those favored localities where the high price of the product will compensate for the smallness of the yield; everywhere else, quantity must have the preference.

In this early stage of California vine culture we do not require an extensive list of varieties. Our long, dry Summers give a uniformity to our climate unknown in Europe. And there is probably less difference in the quality of such soil as should properly be selected for vineyards or its adaptation for grape growing, as in consequence of their volcanic origin the elements of true nutrition are more constantly present. In France, twelve hundred or more varieties of vines are cultivated. It certainly would simplify our operations if we could designate those to be planted by units instead of thousands. Yet it is not probable we shall ever find a grape to unite with productiveness all the requisites of a desirable wine grape, if we aim to manufacture a wine above the ordinary kind. We require varieties to mix with each other. The wine of our Mission is improved by mixing with almost any variety having less sugar and more tartaric acid; nor are our best varieties so perfect that they may not be made better with its must commingled with the must of other varieties having constituent qualities adapted to such a union. The quality of the wine is not only improved, but the success of manu-

facture is rendered more secure. Thus certain musts are liable to remain sweet for want of ferment. These are corrected by adding must of different characteristics. This principle may be applied in various ways, as when sugar, tannin, acid, or water may be in too large or too small proportions, and it is particularly demanded to impart flavor when required.

It is convenient to have varieties with diverse epochs of maturity, in order to prolong the vintage, and have the harvesting done gradually, so as to avoid being pressed with an unwieldy force of laborers at one time. This can be effected by planting such varieties as will ripen at different periods. In Languedoc, whose climate more nearly resembles that of California than the more notable wine districts of France, this plan is systematically pursued, by planting one third which ripen in September, one third ripening a fortnight later, and another third which ripens still later. And here it may be remarked, en passant, that California might have derived lessons of more practical value in viniculture from Languedoc than she has from Germany and Northern France, from whence we have chiefly derived our example and reproof, and it is not improbable that her favorite grapes may be those best adapted to our circumstances. Their vines like ours are planted comparatively far apart, and are trained as we train, with low stocks and short spurs. Their yield is reported as enormous, in fact well nigh incredible—fifteen hundred, two thousand, and even twenty-five hundred gallons to the acre. Flagg, in his work on European vineyards, mentions one proprietor (M. Mares) as making, from two hundred and fifty acres, three hundred and seventy-five thousand gallons of wine. This would be at the rate of fifteen hundred gallons to the acre.

The names of the varieties best known among us we propose to give, with a reference necessarily brief to their characteristics, and then select from them those regarded as entitled to our confidence and adapted to circumstances now existing in California. The Mission, or California, claims the first notice as the earliest known and most widely cultivated. Many still think it the most profitable grape. This opinion is less common every year, and will probably soon cease to be entertained at all. It is claimed for the Mission that it is of hardy growth, exempt from disease and accidents; that it makes good, sound, well-keeping wine; and in consequence of its large supply of sugar yields abundantly of spirit. This may all be true, and yet there are other varieties possessing all these qualities, and, with the exception of its spirit capacity, possess them in a more eminent degree. It will scarcely be denied that it has some positive objections. The proportion of sugar is too large to that of tartaric acid to make an entirely acceptable wine. This saccharine excess is liable to suspend fermentation at a slightly reduced temperature. The absence of an agreeable flavor is conspicuous. Its red wine is not in popular favor, nor does its dry white wine ever allow an excellence to exalt our State in wine product to a level of France and Germany. Yet those having vineyards largely planted in Mission grapes need have no regret on that account. It is an admirable adjunct to other grapes, to commingle their merits. Possessing in a large measure sugar, the most essential ingredient in wine, we may get aroma from one and tartness from another to supply its deficiencies in these qualities.

Black Malvoisie, the grape known as Pino, and by other synonyms (for our vinicultural nomenclature is eminently confusing), is entitled to rank among the highest of our wine grapes. It possesses all the good

qualities claimed for the Mission; some of them in a higher degree. Thus in some localities it is more certain and more prolific. It ripens earlier. Made into white wine it has thus far promised well, while its red wine is better colored and of more agreeable flavor. Mixed with Mission for red wine, the last named is decidedly improved.

Zinfindal—a black grape of heavy product, standing among the very first in this respect. The two prominent excellences of its wine are tartness and a peculiar and delightful flavor resembling the raspberry—a flavor which the palate persistently relishes. Mixed with the Mission, it favors fermentation and improves its color and aroma. Even when mixed in moderate proportions in ferruginous soils it is par excellence our red wine grape, the one which we confidently hope to contend successfully for the place in public esteem now worthily occupied by the skilled vintages of France. Those planting vines on suitable sites, in soils rich in iron, cannot go far astray in planting ever so largely of this variety, for its white wine is also of superior quality. What other grape have we uniting abundant product and abundant flavor? The color of its red wine, too, is striking, not unlike the famous Montepulchaine. One objection to it should not be omitted mention of; its liability to sunblast in certain localities. It would not be safe to plant it too freely where the Hamburg cannot succeed; but even then there is a partial compensation in a generous second crop. The second crop of Zinfindals is, as a rule, large, and unlike the second crop of most other grapes, and well worth gathering. It makes a wine of lighter color and body; but the flavor is scarcely inferior to that of the first crop.

The Rose of Peru is of hardy growth and prolific, not so succulent as the preceding, the wine product is in less proportion. Its wine is not well known. Some assert that it has made port wine of best promise. The Black Hamburg was extensively planted a few years ago, but now neglected chiefly from its liability to sunblast. It is probably an inferior wine grape to the Black Malvoisie, besides being more uncertain.

Of white grapes, the Golden Chasselas, with its multitudinous synonyms, is entitled to a conspicuous place. It has a hardy stock, bears abundantly and ripens early. The wine is smooth and rather light, without a characteristic flavor.

The Berger, called Caveilac by the French, is a white grape, ripening late and a very heavy bearer. Wine light and tart—an admirable adjunct to the Mission to promote its fermentation, reduce its body, and communicate tartness. It is perhaps the latest bearer among our wine grapes, unless we include the Queen of Nice, or White Nice, which likewise makes a light, tart wine resembling the white *vin ordinaire* which the lowest on the Rhine has served to him in the wine shops.

The Fiher Zagos, a certain and good bearer, with more sugar and less tartaric acid than the above. The wine is smooth and delicate.

The Chasselas family (not including the so-called Golden or German Chasselas), of which the Chasselas Fontainbleau, Rose Chasselas and Barbaroux are prominent members, ripen among the earliest and bear well. Wine smooth, light, and keeps well, without characteristic flavor. The vines sucker badly and require pruning with long spurs.

We now approach varieties entitled to a first consideration, if we were in search of the quality of the product without regard to the cost of the production. Prominent among these are the Reislings. The wines made from them in California, though of less excellence than the

famous Rhenish vintages, are, in some cases, of superior quality and of high promise; but the Reisling wine has not so far been sufficiently profitable and certain to have encouraged its rapid extension. It is alleged that high training will insure a good crop; but it has not been proven other than on a large scale that vines can thus be trained with profit. It certainly will not do so if by a few heavy crops we impair the vigor or perhaps sacrifice the vitality of the plant. Wherever high training is practiced in the Mississippi Valley, it requires an amount of labor that differs so widely from our economical processes as would make it to us an unsafe enterprise. On the whole, the profitableness of cultivating the Reisling grape may, up to this time, be regarded as an open question. The De Shay, sometimes called the Gray Reisling, makes a wine with considerable bouquet, but the same objection applies to it. Moreover, it requires more time to mature than our rates of interest justify. These remarks, perhaps, in a great measure, apply to those varieties that are properly classed as Burgundy grapes, as well as some grown in Champagne and the Gironde, and to be found in some California vineyards.

Of the musk grapes, the most valuable variety for wine is the Muscatel, otherwise called the Muscat of Frantignan, the German Muscat, and by other synonyms. It ripens early, is a shy or barely moderate bearer, and requires a warm and rather fertile soil. Its musk flavor is strong, yet delicate. Its cultivation on a more extensive scale in California is desirable, where we have so few grapes of decided flavor. In the single province of L'Hirault, France, there are five thousand acres devoted to its culture, and yet the product of wine from it, in many instances, does not exceed sixty gallons to the acre; but it is, in such cases, sweet wine made from partially dried grapes. The Muscat of Alexandria bears better, but the flavor is inferior to the Frontiniac. Ripening about the time of the Mission's maturity, their musts may be advantageously mixed.

In our present scarcity of flavoring grapes it may be desirable to those with extensive vineyards to have in them a few of our American grape vines, V. Lupina. The Catawba is perhaps the preferable on account of its color. A small quantity of the must of the Catawba and Muscatel mixed with a much larger quantity of Mission must has been known to make a sensible improvement. The subject is worthy of consideration.

To sum up in a few words the conclusions derived from the above imperfect descriptions from the best grapes to plant for wine making, where a very small number are to be selected, we enumerate the Black Malvoisie and Zinfindal among the colored grapes, and the Golden Chaselas, with the Berger, Filher Zagos, and Chaselas Fontainbleau among the white grapes. Of musk grapes, the Muscatel is preferred. To owners of Mission vineyards in search of suitable varieties of grapes to mix with them at the press, or their must in the cask, the Malvoisie, Zinfinal, for red wine, and Berger and Muscat for white, are deemed preferable. When red wine only is intended to be made, and only one variety to be planted, the Zinfindal is esteemed the best, if the site is a proper one and the soil abounds in iron.

To conclude, it must be borne in mind that in the infancy of California viniculture accuracy is unattainable on this subject. In the oldest and most enlightened wine countries of Europe they still want positive knowledge on points of interest that have elicited their attentions for centuries; and yet it will not be without profit if we succeed at this

early day in finding ever so few kinds in our search for the best that will give assurance to those planting new vineyards or extending old ones that what they plant will not be of a variety altogether unsuited by surrounding circumstances. The losses sustained by propagating useless vines whose qualities remained to be tested has been very great, and continues to be. If hereafter those in doubt would limit their selections to the few we have named, these errors would greatly be avoided. In the meanwhile it does not follow that we possess the very best kinds for our purpose. With the soil and climate of California, our vineyards should not be surpassed in productiveness by the vineyards of Languedoc, but we have reliable testimony that they are. If the variety cultivated contributes to this superiority, we should not delay in procuring those whose reputation for productiveness is best established.

The views here presented are not set forth authoritatively as the expression of the widest experience and best judgment. It is not probable that they will meet with an approach to general concurrence; but if they accomplish nothing more than to invite inquiry and promote investigation they will serve a good purpose. It does not challenge criticism, but invokes investigation.

JOHN A. LOCKWOOD.

THE BEST GRAPES FOR GENERAL CULTURE.

For shipping and the table I prefer the Rose of Peru, White Muscat of Alexandria, Flame-colored Tokay, White Palestine, White Hamburg, Purple Damascus, Black Malaga, Black Prince and Black Hamburg. These varieties all bear abundantly, are fine pulpy grapes and command good prices. For making white wine to ferment the skins I prefer the White St. Peters; this variety makes remarkably fine wine; White Malaga—this makes good wine and a greater quantity of a very good quality, also fine brandy; White Muscat, White Truvriner, Orleans, White Reisling, White Muscatel, and White Nice. The above are all good for making wine by fermenting of skins or without. For making port, claret, or red wine, the Rose of Peru, Black Hamburg, Black Burgundy, Black Prince, Los Angeles, Black St. Peters, and Black Malaga. For making white wines without fermenting on skins, all of the above are excellent; also, Black Zinfindal, Black Portugal, Black Martell, Black Malvatia, Catawba, Isabel, and Concord. The three latter, if grown on rich alluvial soil, and pruned with very long spurs, produce abundantly and make a high toned excellent wine that commands a good price. If improperly trained the yield is too small. There should be left from six to eight eyes on spurs. In this way the young shoots while tender do not break off so badly; in fact, I have not tried any kind of good, ripe grapes, grown in a proper location, but what make good wine of some kind. All of the above varieties I have named are profitable to raise, and I should not fear to extend their cultivation to any extent with a positive certainty of success, if a good, dry location is selected, clear of alkaline matter, and properly trained, pruned, and taken care of. For raisins I would choose, in the order named, the White Malaga, White Muscat, White Napoleon, White Candalia. The latter, I think, promises to be very good, although I have not tried it to my satisfaction entirely. The White Malaga I think is preferable, and bears so abundantly, and makes a very tender, fine raisin, and cures so readily. It should be cul-

tivated on dry soil, reducing the spurs and increasing the eyes, so that the fruit may have plenty of space. It sometimes grows in such clusters that it rots, as the heat and light cannot circulate through them.

J. R. NICKESON, Placer.

NATIVE AND FOREIGN WINES.

The wine product of the State of California, although yet in its infancy, now numbers several millions of gallons annually; starting from the labors of the Catholic missionaries, who it is said, and from good authority, raised the California grape from the seeds of raisins sent to them from Spain. There may have been roots or cuttings introduced into Mexico from Spain at an early day, and they may have obtained some of these from Mexico. The priests of the missions are entitled to the honor of first introducing the fruit into California. In connection with this matter we should not forget the labors of Colonel Haraszthy, for to his zeal and enthusiasm California is indebted for many of the choice varieties of foreign grapes, and also the successful demonstration that the grape could be grown from the cutting without irrigation.

Justice compels us to give him a share of the credit we so cheerfully award to the Fathers. The Grapegrowers' Association of the counties of Napa, Solano, and Sonoma has been in existence for two years, and those who are interested in the business of cultivating the grape and manufacturing wine have felt its beneficial influence. They number in their ranks some of the most intelligent and worthy citizens of the three counties. In the association are introduced subjects relating to the particular business interests of the vintner and wine maker; discussions are had on all matters appertaining to their interests, and much valuable practical information is obtained that cannot be found in books; for nearly all books that treat of grape-growing have been written for a climate differing very much from ours, and will not apply to California. The movement now on foot to establish a State Association of Grapegrowers and Wine Makers is one fraught with great results to the State in an industrial point of view. As to its monetary aspect, the time is not far off when the grape growing and wine making interests will rank as one of the foremost of our agricultural resources.

Much has been said about the use of wine as a beverage, and many deprecate the use of it. Everything that God has given us is good; it is the abuse of what he has given us that is bad—gluttony, the excessive use of opium, tobacco, chloroform, and even chloral hydrate; and I might go on and enumerate many other things and many habits that are as fully life-destroying and degrading as drunkenness. If reformers would turn their attention to reformation they must make a catalogue of all the vices and attack them en masse. Of many vices of a much more deplorable and ruinous character to the health of both sexes but very little has been said by public reformers. If reform must be the order of the day, let us sweep the whole mass of objectionable things from the face of the earth. As regards stimulating drinks, there is not a nation on the face of the earth, either civilized or savage, that does not make use of stimulating and intoxicating drinks in some form or other. If men will drink, and it cannot be prevented either by law or public opinion, what next is best to do? Give them a fine and healthful

article of wine; as the hard drinker would say, "let them taper off on that." Let them acquire a taste for such a beverage—for drink men will have. Wine will not hurt them as will the strong decoctions of spirits that are made by almost every respectable liquor dealer in the dark corners of his cellar, where cocculus indicus, and many other "cusses," are mixed with alcohol, flavored and brewed to represent every kind of drink that ever had existence, the basis of all of which is alcohol. I do not know of an instance, neither have I ever heard of one, when a man had delirium tremens from the use of fine wine. I wish it understood that I do not now allude to medicated wines, such as Redding speaks of as genuine port, made from London Dock, brandy come, red cape, cider, and a mixture of gum dragon, red sanders, alum, and tartar. This is the old crusty port that is sought for sometimes by physicians to administer to their patients to give them strength and nourishment. It is but a few days since that I was talking with a gentleman about the manufacture of brandy from the grape. He informed me that a New York druggist remarked that California brandy was too expensive; he made an article that suited his customers just as well as any high-priced brandy, and the cost was not one-quarter that of the pure article.

The adulteration of wine is not a practice very recently introduced. During the days of George IV he possessed a very small quantity of remarkably choice and scarce wine. The gentlemen of his suite, whose taste in wine was hardly second to their master's, finding it had not been demanded thought it had been forgotten, and, relishing its virtues, exhausted it almost to the last bottle, when they were surprised by the unexpected command that the wine should be forthcoming at an entertainment the next day. Consternation was visible on their faces; a hope of escaping discovery hardly existed, when one of them, as a last resort, went off in haste to a noted wine brewer in the city of London, numbered among his acquaintances, and related his dilemma. "Have you any of the wine left for a specimen?" said the adept. "O yes; there are a couple of bottles." "Well, then, send me one, and I will forward the necessary quantity in time; only tell me the latest moment it can be received, for it must be drank immediately." The wine was sent—the deception answered; the princely hilarity was disturbed by no discovery of the fictitious potation, and the manufacturer was thought a very clever fellow by his friends. Such clean pieces of deception are practiced upon the public every day, and I should judge that they rather like it than otherwise, for they continue to ignore the pure juice of the home grape, and accept a foreign article of doubtful reputation at least, simply because it bears a foreign brand. Spurious decoctions are not only made in all grape-growing districts in Europe, but in the United States also. A case was related some time since in one of the French courts, where a wine brewer was arraigned for making spurious wines. The best chemists of Paris were summoned to analyze the wine, and they pronounced it the most perfect counterfeit that they had ever examined, there being only one article lacking to make it perfect. The Judge asked what that was; the chemist informed him. The culprit acknowledged that the wine was spurious, and that he was ready to pay his fine, for the knowledge of the deficient ingredient was worth more to him than all the fines they could impose on him.

To such a degree of perfection are the imitations of wines and brandies carried, that it is almost impossible for the best expert to detect the counterfeit. Now as to spirits; it is truly astonishing when we

come to search the records in reference to the amount of alcoholic beverages that are consumed in the world to see the summing up. Statistics taken from a work published by Samuel Morewood, of London, Surveyor of Excise in eighteen hundred and twenty-four, gives the following information (the book is dedicated to Frederick John Robinson, Chancellor of the Exchequer): In seventeen hundred and eighty-seven, France freighted thirty-two vessels, and imported into England two million four hundred thousand gallons of brandy, and most of this was smuggled. The Dutch distilleries produced annually, in seventeen hundred and seventy-four, fourteen million gallons of gin; four million five hundred and sixty thousand of which were consumed in their own country. In Denmark, in eighteen hundred, Copenhagen annually produced spirits amounting to two million three hundred and forty-seven thousand eight hundred and fifty gallons. At Hensburg, two hundred stills were employed, and the produce was sent to Iceland and Norway. Russia distilled annually twenty-seven million gallons of brandy. This is a Government monopoly. These are but a few statistics. Startling and enormous as that of Russia may appear, it may be but small compared to that distilled at present, for these statistics were published forty-eight years ago. I have quoted sufficient to show the quantity of spirits that is distilled in but a few places, and the necessity for active measures to be taken to stop its use. Here we wine growers and wine makers come in as temperance men (the real Simon Pure) to the rescue. This can only be done by giving to the world a substitute for the villainous compounds that are sold as fine liquors. And California is willing and ready to do so. I have not the slightest doubt that this State is destined to accomplish this ameliorating influence, just as she has accomplished others by the discovery of the precious metals in her soil, both of which will have a deep and widely extended influence among the nations of many climes.

Come, then, with us, ye Solons of the land, and help us to spread the genial influence of our wholesome wines:

"The ruby dew that 'stills
Upon Val d'Arnois hills,
Touching the sense with odor so divine
That not the violet,
Its lips with morning wet,
Utters such sweetness from her little shrine.
When I drink of it I rise
O'er the hill that makes all poets wise;
And in my voice and in my song
Grow so sweet and grow so strong,
I challenge Phœbus with his Delphic eyes!
Give me then from a golden measure
The ruby that is my treasure, my treasure!"

When we speak of wine, we mean wine old and insinuating, that gradually finds its way into the stomach, leaving behind as it goes its delicious flavor and rich bouquet. "Good wine needs no bush." This is an old proverb, and originated in a custom in wine growing countries in Europe of placing a bunch of evergreens over the entrance of the house where wine was sold. A certain bishop, who was fond of good wine, instructed his valet, who traveled through Italy in advance of him, to mark under the bush "Est" ("It is") if the wine was good, and "Est, est" when it was very good, and when he found it indifferent he should not write anything. Now I wish every Californian to bear in mind that his wine should come up to the standard of "Est, est, ("It is, it is") good

at least, and as much in advance of that as possible. So you will perceive that the wines in famous Italy were not always good. An old author, however, says that in the better days of our Lady of Loretto they had a cellar of remarkably good wine there for the use of the faithful. The Church, as was her custom, exhibited her good taste, constantly keeping up a stock of not less than one hundred and fifty tons for this purpose, say three hundred pipes. The wines of Vicenza had once a good name; they were styled, in the way of the Italians, who love epithets, "*dolce et piccante.*" "The wine of Vicenza," the "Bread of Padua," the "Pipe of Traviso," and the "Courtezans of Venice" were formerly said to be the best of their kind in the world, and I presume that the man who wrote that had a right to know. Be this as it may, my friends, in our business of grape growing and wine making, let us endeavor to emulate all that is good in our predecessors, and ignore the bad. I hope that in your efforts to establish a State Association you may be crowned with success; and you must recollect that there is no success in any cause among idlers or drones; everything requires work, and if you still find there is something needed, you may be sure that it is a little more work.

J. R. SNYDER,
Sonoma.

BRANDY FROM GRAPE POMACE.

Mr. President and Members of the Vinegrowers and Wine and Brandy Manufacturers' Association:

At the last meeting of the association there was some discussion on the manufacture of brandy; on which occasion I took the ground that a good brandy can be made from marc. That no more fusel oil should be left in the brandy than was absolutely necessary to give it the characteristic flavor of the grape after attaining the age of a year or more. That steam was better than the direct action of fire for the purpose of distillation, and on those points I wish to quote a few authorities. The United States Dispensatory, Wood and Bache, page 801, says: "There are volatile principles naturally existing in the grains, which accompany the liquor in all its changes, and give their characteristic flavor to the resulting spirit. These can scarcely be considered as impurities; but there are others produced during the process of fermentation, which serve seriously to contaminate the product. Among these is fusel oil or grain oil (amylic alcohol), which is offensive both to the smell and taste, and of which it is very desirable that the spirit should be freed as far as possible. As this oil has a considerably higher boiling point than alcohol, or even water, it is mainly left behind, if the distillation be not carried too far; yet portions still rise, and, to a certain extent, impregnate the spirit." From the New York *Journal of Pharmacy*, page 257: "Crude fusel oil (or oil of grain spirit) when distilled in a glass retort commences to pass over at about 190 deg. Fahr., and a considerable portion is obtained below 212 deg." Again, *American Journal of Pharmacy*, page 417: "With respect to the history of fusel oil: As is well known, Dumas obtained it first from the fermentation of potatoes. Ballard showed that with this, the oil obtained from the fermentation of grapes was in its principal constituent (amylic alcohol) identical; and Medlock and Rowney showed the same to be the case with the fusel oil of the English and Scotch distillers." Duplais, who is

considered a good French authority on distillation, says of the advantages of heating by steam instead of fire: First—economy of fuel, since it permits all the operations of the distiller to be conducted by the use of a single furnace, when otherwise each one would require a separate fire. Second—economy of labor and consequently greater facility of personal supervision. Third—perfect regularity of temperature necessary for the work. Fourth, and as a consequence of this regularity of temperature—a superiority in the quality of the product. On the style of still used in France, the same author says of the Derosne still: "It is in use in the larger portion of the distilleries of France," and with regard to the size of the apparatus: "The greater the capacity of the apparatus the better the quality of the product."

The same author, in speaking of marc brandy, says: "Usually the process of obtaining marc brandy is very objectionable. The following is the method pursued in wine growing countries: The marc, on leaving the press, is borne to a deep pit dug in the earth, sometimes plastered with clay, in which it is packed and pressed as it is brought. When the pit is full it is covered with straw, vine leaves and twigs, over which is thrown a thick bed of earth to prevent contact with the air. The whole is left to ferment for about six weeks. When it is thought the fermentation is completed they commence to distill the marc. For this purpose the boiler of a simple still, having a grating on the bottom, is filled to about three fourths with the marc, then a sufficient quantity of water is poured in to prevent the marc from burning in the still. It is then closed by luting and heat applied. The first product of the operation is very weak, and must be rectified or distilled to produce potable brandy at fifty degrees. The marc, thus submitted to a sort of dry fermentation, evolves an amount of heat sufficient to decompose it promptly and cause it partly to putrify, if care is not taken to be assured from time to time whether the fermentation is completed. A preferable method, which is adopted by some proprietors, consists in mixing the marc in a vat with tepid water at twenty-five to thirty degrees (seventy-seven to eighty-six degrees Fahrenheit), to cause a new fermentation, from which is drawn a light wine called piquette and which is distilled separately. The marc is then distilled with a small quantity of water.

Brandy from the marc has a very disagreeable odor, and always retains an acid and penetrating taste which is very difficult to remove. This insupportable taste is due to the presence of an essential oil which, according to M. Aubergier, exists already formed in the skin of the grape, and which is not developed in the course of and by the distillation as has hitherto been thought. This chemist, on rectifying some marc brandy in a water bath with a very gentle heat at the beginning of the operation, and regulated so as to obtain a spirit of thirty-six degrees Cartier, perceived that the first portion of alcohol was partly free from the acid principle which strongly impregnated the brandy he rectified. "I undertook," said he, "to repeat the operation, and divided the product into three parts; the first constituting all the spirits drawn off up to the period when I ascertained that the admixture of a small quantity of water caused it to become a little milky; I changed the receiver, and that which came over, until it became necessary to increase the heat sufficiently to cause the liquor to flow in a continuous thread, constituting my second product. After having continued the heat in order to draw off all the alcohol contained in the liquor, I obtained for my third product only a thick milky liquor. I took the first product and after repeated distillations with gentle heat, I obtained an alcohol

almost free from the odor of marc brandy. I conceived the hope that on repeating the rectification I might obtain a spirit absolutely free from this bad taste; but I tried in vain through three other operations. My alcohol had not the most agreeable flavor, and I think it altogether impossible to free it from a principle so tenacious."

From the foregoing quotation it is probable that the marc was fermented in a pit, and to some extent had putrified before being distilled. It is not surprising, therefore, that M. Aubergier failed to remove this insupportable taste. Had the marc been fermented in six days instead of six weeks, and distilled in a proper still by steam, instead of the direct action of fire, a fine flavored brandy would have been produced. I distilled some grape skins this season, part of which had heated, having had the wine pressed from them several days before I received them. They yielded a spirit which on the first distillation showed no milkiness on the addition of water; but owing to the large amount of acetic acid, a proportionate quantity of acetic ether was produced. To manufacture good brandy from marc it is necessary, first, to remove the skins (marc) as soon as pressed to a suitable fermenting tub, then cover with warm water, and a false head or cover to keep the skins under the piquette. After a few days, if the piquette is not attenuating as rapidly on the bottom of the tub as on the top, it should be drawn off the bottom and put on top. This will stimulate the fermentation. The skins should never be allowed to float on top of the piquette, or the acetic or putrescent fermentation will commence immediately. Acetic acid is formed at the cost of alcohol—therefore the necessity of preventing its fermentation; and the putrid flavor once acquired can perhaps only be removed by filtering repeatedly through charcoal, which, of course, would destroy the flavor of the grape. Second—It should be then distilled by steam (not by the direct action of fire), and with a rectifying column, by which, at one operation, the operator can deprive it of as much of its fusel oil as is desirable.

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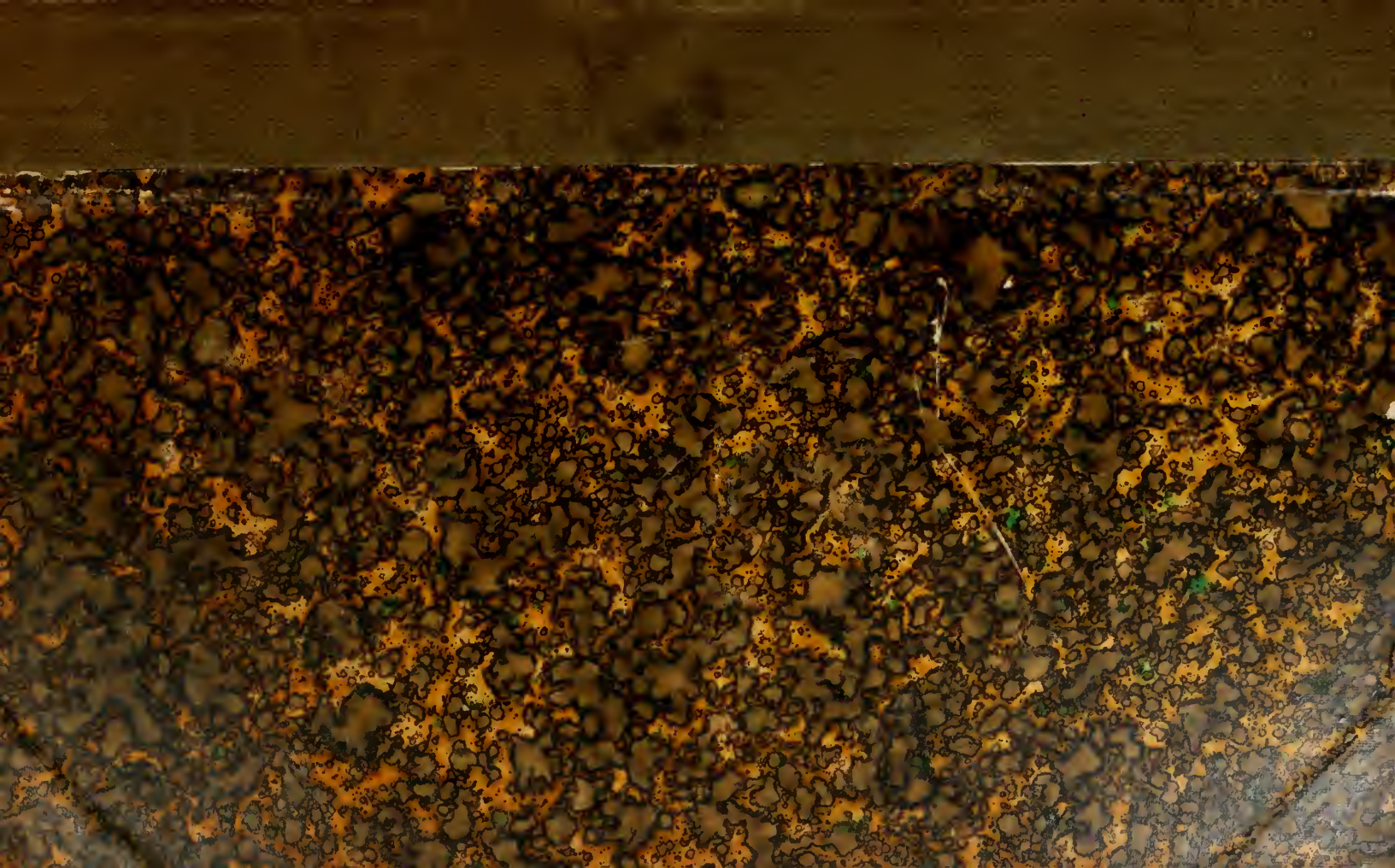
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